System Board
User's Manual

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FCC and DOC Statement on Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

2. Shielded interface cables must be used in order to comply with the emission limits.

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Warranty

1. Warranty does not cover damages or failures that arised from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.

2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.

3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.

4. We will not be liable for any indirect, special, incidental or consequencial damages to the product that has been modified or altered.

Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.
2. Wear an antistatic wrist strap.
3. Do all preparation work on a static-free surface.
4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.
5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.

Important:
Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

Safety Measures

To avoid damage to the system:

- Use the correct AC input voltage range.

To reduce the risk of electric shock:

- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:

- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.

About the Package

The system board package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

- ☑ One system board
- ☑ One IDE cable
- ☑ One floppy cable
- ☑ Two Serial ATA data cables
- ☑ One power cable with 2 Serial ATA power connectors
- ☑ Smart connectors
- ☑ One I/O shield
- ☑ One RAID driver diskette
- ☑ One "Mainboard Utility" CD
- ☑ One user's manual
- ☑ Auto Boost System (ABS) installation guide

The system board and accessories in the package may not come similar to the information listed above. This may differ in accordance to the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

Before Using the System Board

Before using the system board, prepare basic system components.

If you are installing the system board in a new system, you will need at least the following internal components.

- A CPU
- Memory module
- Storage devices such as hard disk drive, CD-ROM, etc.

You will also need external system peripherals you intend to use which will normally include at least a keyboard, a mouse and a video display monitor.

Chapter 1 - Introduction

Specifications

Processor	• AMD® AM2+ processors: Phenom™ FX / Phenom™ / Athlon™ / Sempron™ AMD® AM2 processors: Athlon series / Sempron™ • HyperTransport 3.0 (5200MT/s for AM2+) HyperTransport 1.0 (2000/1600MT/s for AM2) • AMD OverDrive provides tuning options using the new "Advanced Clock Calibration" overclocking feature. • Socket 940 AM2+ 65nm
Chipset	• AMD chipset - Northbridge: AMD 790GX - Southbridge: AMD SB750
System Memory	• Four 240-pin DDR2 DIMM sockets • Supports DDR2 667/800/1066 MHz DIMMs • Supports dual channel (128-bit wide) memory interface • Supports up to 8GB system memory • Supports unbuffered non-ECC x8 and x16 DIMMs
Expansion Slots	• 2 PCI Express (Gen 2) x16 slots - Hybrid CrossFireX™ - combination of the integrated graphics and a discrete graphics card in a PCIE slot (8-lane port). - Two graphics cards support CrossFireX™; each operating at x8 (8-lane ports) bandwidth • 1 PCI Express x1 slot • 1 PCI slot
BIOS	• Award BIOS • CMOS Reloaded • CPU/DRAM overclocking • CPU/DRAM/Chipset overvoltage • 8Mbit SPI flash memory
Graphics	• Integrated ATI Radeon™ HD 3300 graphics core • Onboard graphics interface - HDMI port for both digital audio and video HD display - DVI-I port for digital LCD display • Microsoft® DirectX 10 • Hybrid CrossFireX™ technology combines the onboard GPU and a discrete PCIE graphics card • Onboard Performance cache for added performance
Audio	• Realtek ALC885 8-channel HD Audio Codec • High-performance DACs with 106dB dynamic range (A-Weight), ADCs with 101dB dynamic range (A-Weight)
LAN	• Marvell 88E8056 PCIE Gigabit LAN controller • Fully compliant to IEEE 802.3 (10BASE-T), 802.3u (100BASE-TX) and 802.3ab (1000BASE-T) standards

IDE	• One IDE connector allows connecting up to two UltraDMA 133Mbps hard drives
Serial ATA with RAID	• Supports up to 6 SATA devices • SATA speed up to 3Gb/s • RAID 0/1/0+1(10)/5/JBOD/AHCI
Rear Panel I/O	• 1 mini-DIN-6 PS/2 mouse port • 1 mini-DIN-6 PS/2 keyboard port • 1 HDMI-out port • 1 coaxial RCA S/PDIF-out port • 1 optical S/PDIF-out port • 1 DVI-I port • 4 USB 2.0/1.1 ports • 1 RJ45 LAN port • Center/subwoofer, rear R/L and side R/L jacks • Line-in, line-out (front R/L) and mic-in jacks
Internal I/O	• 4 connectors for 8 additional external USB 2.0 ports • 1 connector for an external COM port • 1 front audio connector • 1 CD-in connector • 1 IrDA connector • 1 CIR connector • 6 Serial ATA connectors • 1 40-pin IDE connector • 1 floppy connector • 1 24-pin ATX power connector • 1 8-pin 12V power connector • 1 4-pin 5V/12V power connector (FDD type) • 1 front panel connector • 6 fan connectors • EZ touch switches (power switch and reset switch)
Power Management	• ACPI and OS Directed Power Management • ACPI STR (Suspend to RAM) function • Wake-On-PS/2 Keyboard/Mouse • Wake-On-USB Keyboard/Mouse • Wake-On-Ring • Wake-On-LAN • RTC timer to power-on the system • AC power failure recovery
Hardware Monitor	• Monitors CPU/system/chipset temperature • Monitors 12V/5V/3.3V/Vcore/Vbat/5Vsb/Vdimm/Vchip voltages • Monitors the speed of the cooling fans • CPU Overheat Protection function monitors CPU temperature during system boot-up
PCB	• microATX form factor • 24.5cm (9.64") x 24.5cm (9.64")

Features

The system board supports high performance DDR2 technology whose data transfer rate delivers bandwidth of 12.8 Gb/s and beyond. That is twice the speed of the conventional DDR without increasing its power consumption. DDR2 SDRAM modules work at 1.8V supply compared to 2.6V memory voltage for DDR modules. DDR2 also incorporates new innovations such as the On-Die Termination (ODT) as well as larger 4-bit pre-fetch against DDR which fetches 2 bits per clock cycle.

ATI's CrossFire™ technology drives your PC to a new peak of performance by combining multiple GPUs in a single system. By connecting a Radeon CrossFire Edition graphics card and a standard PCI Express graphics card, the power of the dual GPUs (Graphics Processing Units) within the system will accelerate your gaming performance and improve image quality.

Based on the ATI CrossFire™ multi-GPU technology, the ATI Hybrid CrossFireX™ takes gaming experience to the next level. Hybrid CrossFireX™ is a combination of the integrated graphics and a discrete graphics card delivering high quality gaming images and improved performance. Its multi-GPU performance capabilities enhance gaming performance, productivity and platform power efficiency to the mainstream PC.

PCI Express Gen 2 is a high bandwidth I/O infrastructure that possesses the ability to scale speeds by forming multiple lanes. The x16 PCI Express lane supports transfer rate up to 5Gb/s.

Graphics

The northbridge chip comes integrated with the ATI Radeon™ HD 3300 graphics core delivering exceptional 3D graphics performance. It supports HDMI and DVI interfaces.

DVI

DVI (Digital Visual Interface) is a form of video interface technology made to maximize the quality of flat panel LCD monitors and modern video graphics cards. Data is transmitted using the TMDS (Transition Minimized Differential Signaling) protocol, providing a digital signal from the PC's graphics subsystem to the display.

HDMI

HDMI (High-Definition Multimedia Interface) is a compact audio/video connector interface for transmitting uncompressed digital streams. It delivers multi-channel audio and uncompressed digital video signals for full HD 1080p visuals through a single cable. Connect a LCD monitor or digital TV that has the HDMI port.

The onboard Realtek ALC885 is a High Definition audio codec and the 6 audio jacks at the rear I/O panel provides 8-channel audio output for advanced 7.1-channel super surround sound audio system. ALC885 also supports S/PDIF output, allowing digital connections with DVD systems or other audio/video multimedia.

S/PDIF

S/PDIF is a standard audio file transfer format that transfers digital audio signals to a device without having to be converted first to an analog format. This prevents the quality of the audio signal from degrading whenever it is converted to analog. S/PDIF is usually found on digital audio equipment such as a DAT machine or audio processing device. The S/PDIF interface on the system board sends surround sound and 3D audio signal outputs to amplifiers and speakers and to digital recording devices like CD recorders.

Serial ATA is a storage interface that is compliant with SATA 1.0 specification. It supports speed of up to 3Gb/s. Serial ATA improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s.

RAID

The system board allows configuring RAID on Serial ATA devices. It supports RAID 0/1/0+1(10)/5/JBOD/AHCI .

Gigabit LAN

The Marvell 88E8056 PCI Express Gigabit LAN chip supports up to 1Gbps data rate.

CMOS Reloaded is a technology that allows storing multiple user-defined BIOS settings by using the BIOS utility to save, load and name the settings. This is especially useful to overclockers who require saving a variety of overclocked settings and being able to conveniently switch between these settings simultaneously.

The options in Genie BIOS allows configuring the system to optimize system performance and overclock capability.

The presence of the power switch and reset switch on the system board are user-friendly especially to DIY users. They provide convenience in powering on and/or resetting the system while fine tuning the system board before it is installed into the system chassis.

CPU Overheat Protection

CPU Overheat Protection has the capability of monitoring the CPU's temperature during system boot up. Once the CPU's temperature exceeded the temperature limit pre-defined by the CPU, the system will automatically shutdown. This preventive measure has been added to protect the CPU from damage and insure a safe computing environment.

IrDA

The system board is equipped with an IrDA connector for wireless connectivity between your computer and peripheral devices. The IRDA (Infrared Data Association) specification supports data transfers of 115K baud at a distance of 1 meter.

USB 2.0

The system board supports USB 2.0 and USB 1.1 ports. USB 1.1 supports 12Mb/second bandwidth while USB 2.0 supports 480Mb/second bandwidth providing a marked improvement in device transfer speeds between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

Wake On Ring

This feature allows the system that is in the Suspend mode or Soft Power Off mode to wake-up/power-on to respond to calls coming from an external modem or respond to calls from a modem PCI card that uses the PCI PME (Power Management Event) signal to remotely wake up the PC.

Important:
If you are using a modem add-in card, the 5VSB power source of your power supply must support a minimum of ≥720mA.

Wake On LAN

This feature allows the network to remotely wake up a Soft Power Down (Soft-Off) PC. It is supported via the onboard LAN port or via a PCI LAN card that uses the PCI PME (Power Management Event) signal. However, if your system is in the Suspend mode, you can power-on the system only through an IRQ or DMA interrupt.

Important:
The 5VSB power source of your power supply must support ≥720mA.

Wake On PS/2

This function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system.

Important:
The 5VSB power source of your power supply must support ≥720mA.

Wake On USB

This function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state.

Important:
If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5VSB power source of your power supply must support ≥1.5A. For 3 or more USB ports, the 5VSB power source of your power supply must support ≥2A.

RTC

The RTC installed on the system board allows your system to automatically power-on on the set date and time.

STR

The system board is designed to meet the ACPI (Advanced Configuration and Power Interface) specification. ACPI has energy saving features that enables PCs to implement Power Management and Plug-and-Play with operating systems that support OS Direct Power Management. ACPI when enabled in the Power Management Setup will allow you to use the Suspend to RAM function.

With the Suspend to RAM function enabled, you can power-off the system at once by pressing the power button or selecting "Standby" when you shut down the system without having to go through the sometimes tiresome process of closing files, applications and operating system. This is because the system is capable of storing all programs and data files during the entire operating session into RAM (Random Access Memory) when it powers-off. The operating session will resume exactly where you left off the next time you power-on the system.

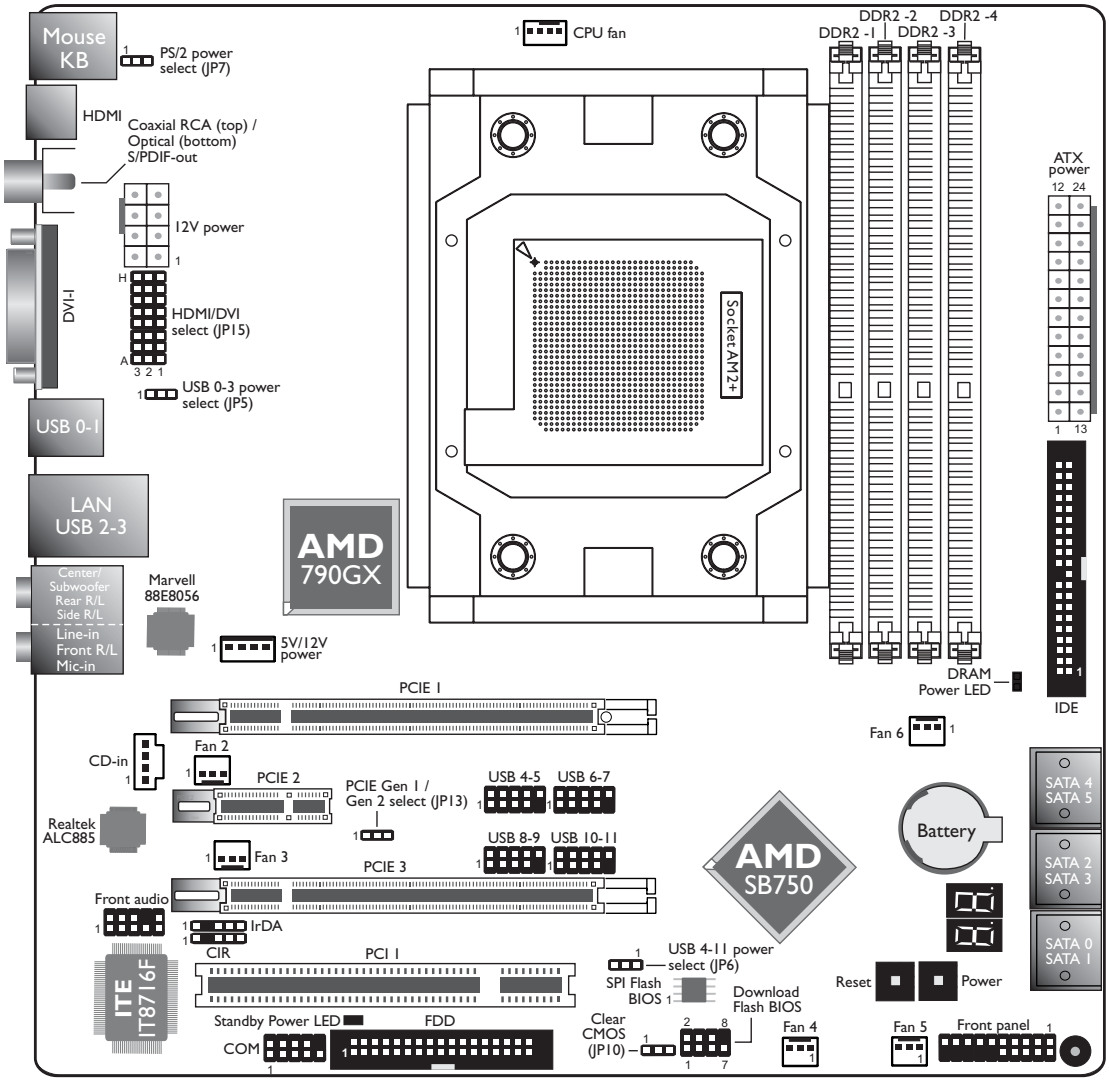
Important:
The 5VSB power source of your power supply must support ≥1A.

Power Failure Recovery

When power returns after an AC power failure, you may choose to either power-on the system manually or let the system power-on automatically.

Chapter 2 - Hardware Installation

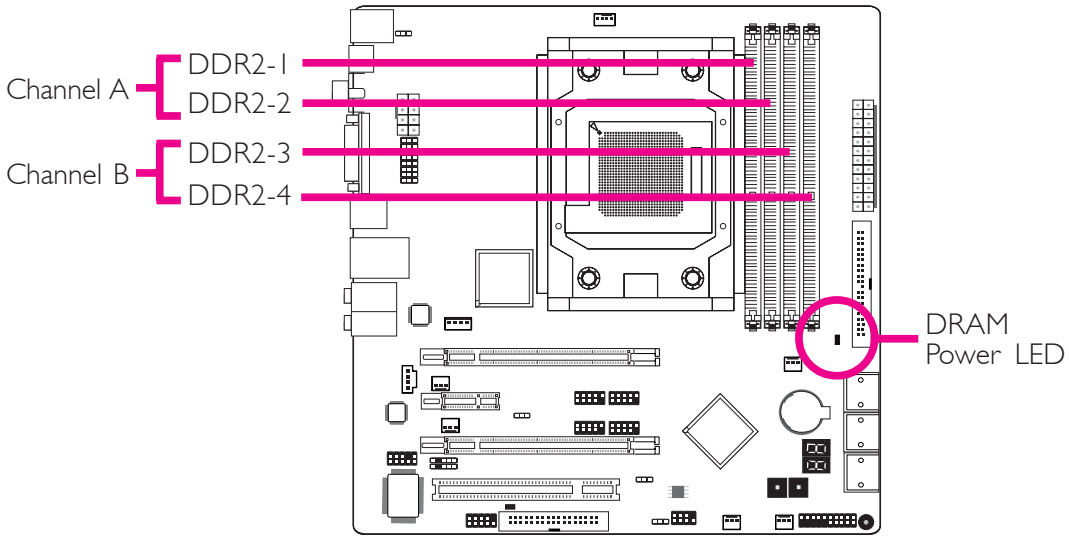
System Board Layout



Warning:
Electrostatic discharge (ESD) can damage your system board, processor, disk drives, add-in boards, and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

System Memory

Warning:
When the DRAM Power LED lit red, it indicates that power is present on the DIMM sockets. Power-off the PC then unplug the power cord prior to installing any memory modules. Failure to do so will cause severe damage to the motherboard and components.



The system board supports 240-pin DDR2 DIMM sockets. The four DDR2 DIMM sockets on the system board are divided into 2 channels:

Channel A - DDR2-1 and DDR2-2
Channel B - DDR2-3 and DDR2-4

The system board supports the following memory interface.

Single Channel (SC)
Data will be accessed in chunks of 64 bits (8B) from the memory channels.

Virtual Single Channel (VSC)
If both channels are populated with different memory configurations, the MCH defaults to Virtual Single Channel.

Dual Channel (DC)
Dual channel provides better system performance because it doubles the data transfer rate.

Dynamic Mode Addressing
This mode minimizes the overhead of opening/closing pages in memory banks allowing for row switching to be done less often.

Single Channel	DIMMs are on the same channel. DIMMs in a channel can be identical or completely different. Not all slots need to be populated.
Virtual Single Channel	DIMMs of different memory configurations are on different channels. Odd number of slots can be populated.
Dual Channel	DIMMs of the same memory configuration are on different channels.
Dynamic Mode Addressing	In single channel, requires even number or rows (side of the DIMM) populated. This mode can be enabled with 1 SS, 2 SS or 2 DS.
	In VSC mode, both channels must have identical row structure.

BIOS Setting

Configure the system memory in the BIOS.

The table below lists the various optimal operating modes that should be configured for the memory channel operation.

Config	DIMM 1	DIMM 2	DIMM 3	DIMM 4
No memory	E	E	E	E
Single channel A	P	E	E	E
Single channel A	P	P	E	E
Single channel A	E	P	E	E
Single channel B	E	E	P	E
Single channel B	E	E	P	P
Single channel B	E	E	E	P
Virtual single channel	E	P(**)	E	P(**)
Virtual single channel	E	P	P	E
Virtual single channel	E	P(**)	P	P(**)
Virtual single channel	P	E	E	P
Virtual single channel	P(**)	E	P(**)	E
Virtual single channel	p(**)	E	P(**)	P
Virtual single channel	P	P(**)	E	P(**)
Virtual single channel	P(**)	P	P(**)	E
Virtual single channel	P(**)	P(**)	P(**)	P(**)
Dual channel	E	P(*)(2,4)	E	P(*)(2,4)
Dual channel	P(*)(1,3)	E	P(*)(1,3)	E
Dual channel	P(*)(1,3)	P(*)(2,4)	P(*)(1,3)	P(*)(2,4)

Continued on the next page...

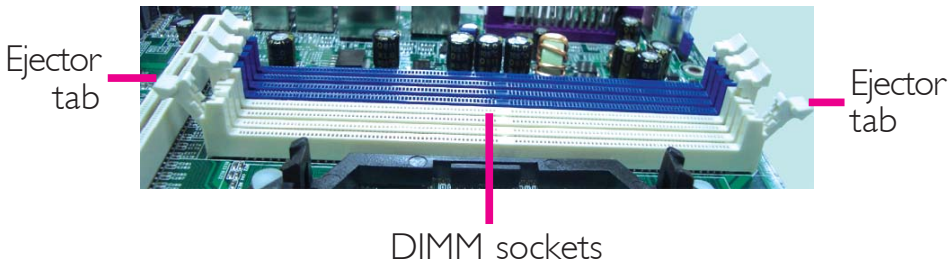
Config	DIMM 1	DIMM 2	DIMM 3	DIMM 4
Dynamic Mode Addressing	E	P(*)(2,4) DS	E	P(*)(2,4) DS
Dynamic Mode Addressing	P(*)(1,3) DS	E	P(*)(1,3) DS	E
Dynamic Mode Addressing	P(*)(1,3) DS	P(*)(2,4) DS	P(*)(1,3) DS	P(*)(2,4) DS
Dynamic Mode Addressing	E	P(*)(2,4) SS	E	P(*)(2,4) SS
Dynamic Mode Addressing	P(*)(1,3) SS	E	P(*)(1,3) SS	E
Dynamic Mode Addressing	P(*)(1,3) SS	P(*)(2,4) SS	P(*)(1,3) SS	P(*)(2,4) SS

P - denotes populated
E - denotes empty
* - denotes DIMMs are identical
** - denotes DIMMs are not identical
SS - denotes Single Sided DIMM
DS - denotes Double Sided DIMM
1, 2, 3 or 4 - denotes the DDR DIMM slot

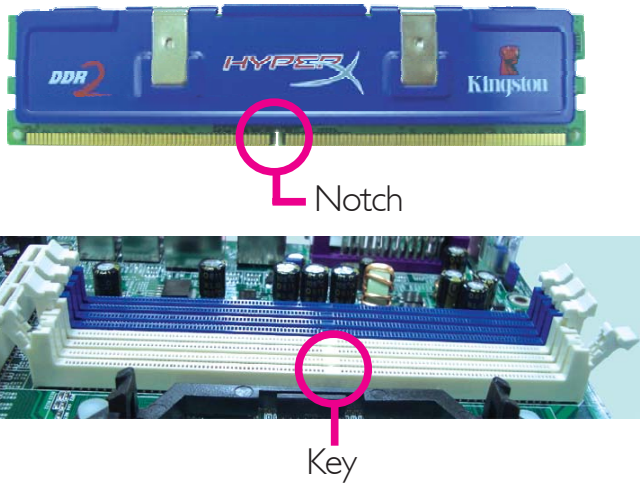
Installing the DIM Module

Note:
The system board used in the following illustrations may not resemble the actual board. These illustrations are for reference only.

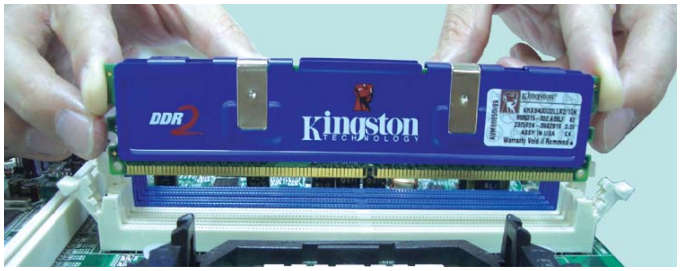
1. Make sure the PC and all other peripheral devices connected to it has been powered down.
2. Disconnect all power cords and cables.
3. Locate the DIMM socket on the system board.
4. Push the "ejector tabs" which are at the ends of the socket to the side.



5. Note how the module is keyed to the socket.



6. Grasping the module by its edges, position the module above the socket with the "notch" in the module aligned with the "key" on the socket. The keying mechanism ensures the module can be plugged into the socket in only one way.



7. Seat the module vertically, pressing it down firmly until it is completely seated in the socket.

8. The ejector tabs at the ends of the socket will automatically snap into the locked position to hold the module in place.

CPU

Overview

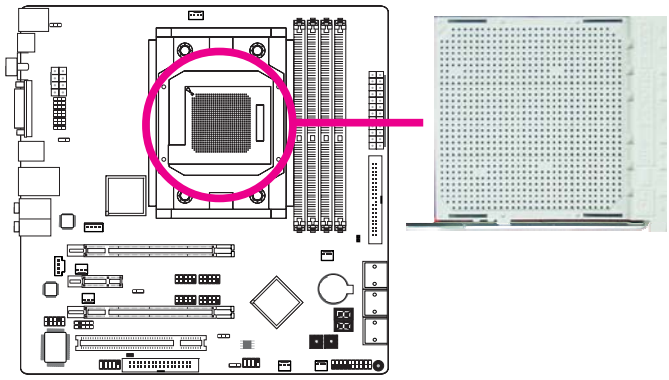
The system board is equipped with Socket AM2+ for installing an AMD CPU designed for this socket.

Installing the CPU

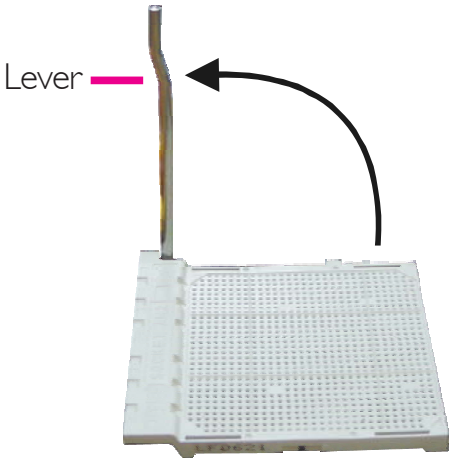
1. Make sure the PC and all other peripheral devices connected to it has been powered down.

2. Disconnect all power cords and cables.

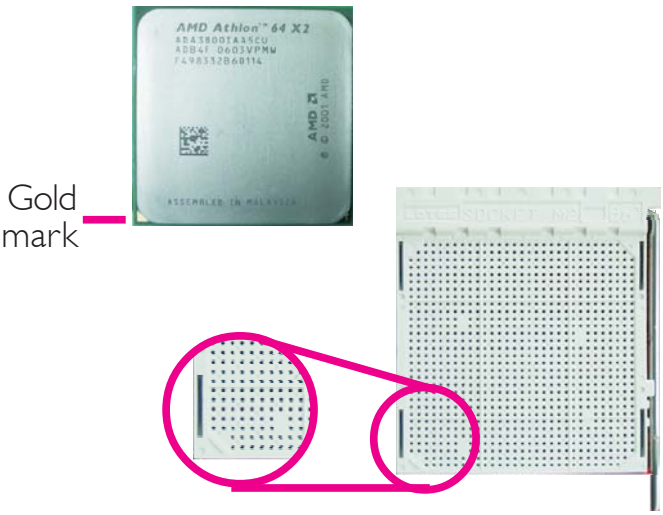
3. Locate Socket AM2+ on the system board.



4. Unlock the socket by pushing the lever sideways, away from the socket, then lifting it up to a 90° angle. Make sure the lever is lifted to at least this angle otherwise the CPU will not fit in properly.

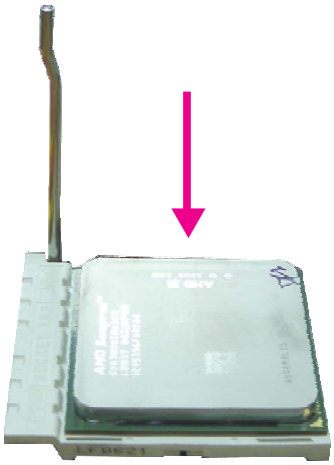


5. Position the CPU above the socket. The gold mark on the CPU must align with the corner of the CPU socket (refer to the enlarged image) shown below.



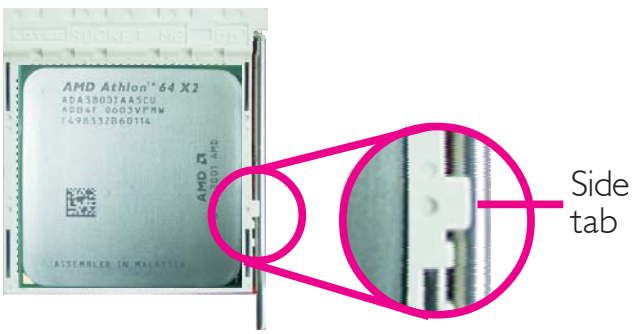
Important:
Handle the CPU by its edges and avoid touching the pins.

6. Insert the CPU into the socket until it is seated in place. The CPU will fit in only one orientation and can easily be inserted without exerting any force.



Important:
Do not force the CPU into the socket. Forcing the CPU into the socket may bend the pins and damage the CPU.

7. Once the CPU is in place, push down the lever to lock the socket. The lever should click on the side tab to indicate that the CPU is completely secured in the socket.



Installing the Fan and Heat Sink

The CPU must be kept cool by using a CPU fan with heat sink. Without sufficient air circulation across the CPU and heat sink, the CPU will overheat damaging both the CPU and system board.

The fan / heat sink assembly must provide airflow adequate to ensure appropriate internal temperature and cooling of the components in the system. Failure to use the appropriate cooling system may result in reduced performance or, in some instances, damage to the system board.

Note:

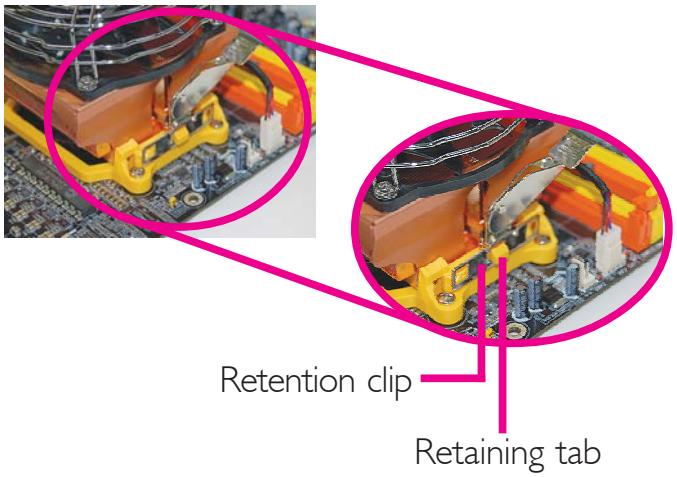
- *Use only certified fan and heat sink.*
- *The fan and heat sink package usually contains the fan and heat sink assembly, and an installation guide. If the installation procedure in the installation guide differs from the one in this section, please follow the installation guide in the package.*

1. Before you install the fan / heat sink, you must apply a thermal paste onto the top of the CPU. The thermal paste is usually supplied when you purchase the CPU or fan heat sink assembly. Do not spread the paste all over the surface. When you later place the heat sink on top of the CPU, the compound will disperse evenly.

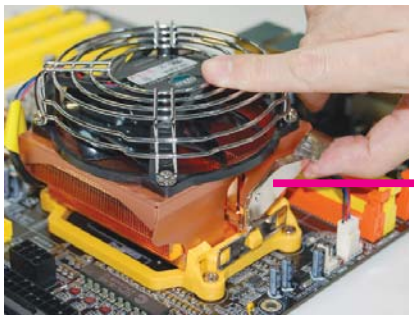
   Do not apply the paste if the fan / heat sink already has a patch of thermal paste on its underside. Peel the strip that covers the paste before you place the fan / heat sink on top of the CPU.

2. The system board comes with the retention module base already installed.

3. Place the heat sink on top of the CPU. Now hook one side of the retention clip onto the retention module base by fitting the hole(s) on the retention clip into the retaining tab(s) of the retention module base. Hook the other side of the retention clip so that the hole(s) on the retention clip also fit into the retaining tab(s) of the retention module base.



4. Move the retention lever to its opposite side then push it down to lock the fan and heat sink assembly to the retention module base.



Note:

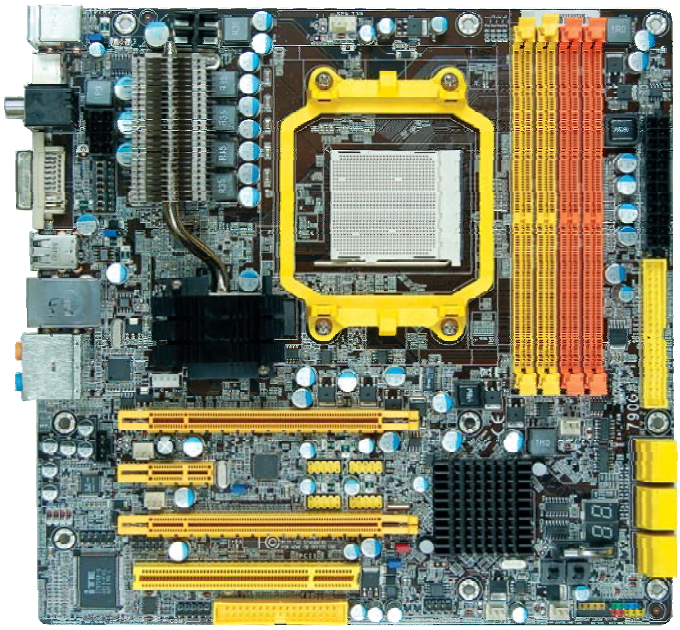
- You will not be able to secure the fan and heat sink assembly in place if it did not fit properly onto the retention module base.
- Make sure there is sufficient air circulation across the CPU fan and heat sink.

5. Connect the CPU fan's cable connector to the CPU fan connector on the system board.

Northbridge Heat Sink

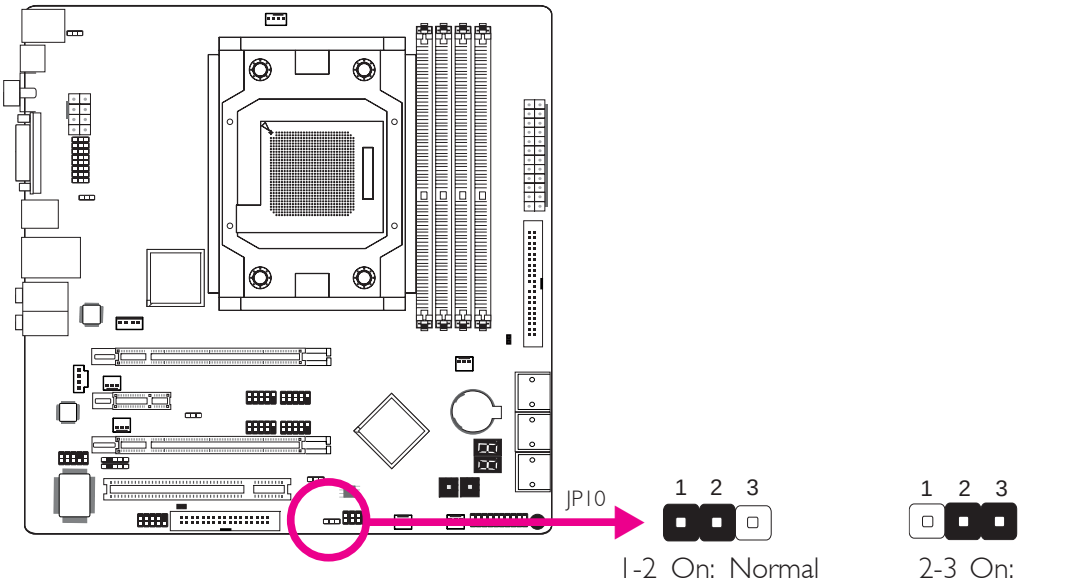
The Northbridge must be kept cool by using a heat sink. The heat sink will dissipate heat generated by the Northbridge. Without the heat sink, the Northbridge will overheat damaging both the Northbridge and the system board.

The system board comes with the heat sink already installed on the board. The copper-made heat pipe technology provides excellent heat dissipation.



Jumper Settings

Clear CMOS Data



If you encounter the following,

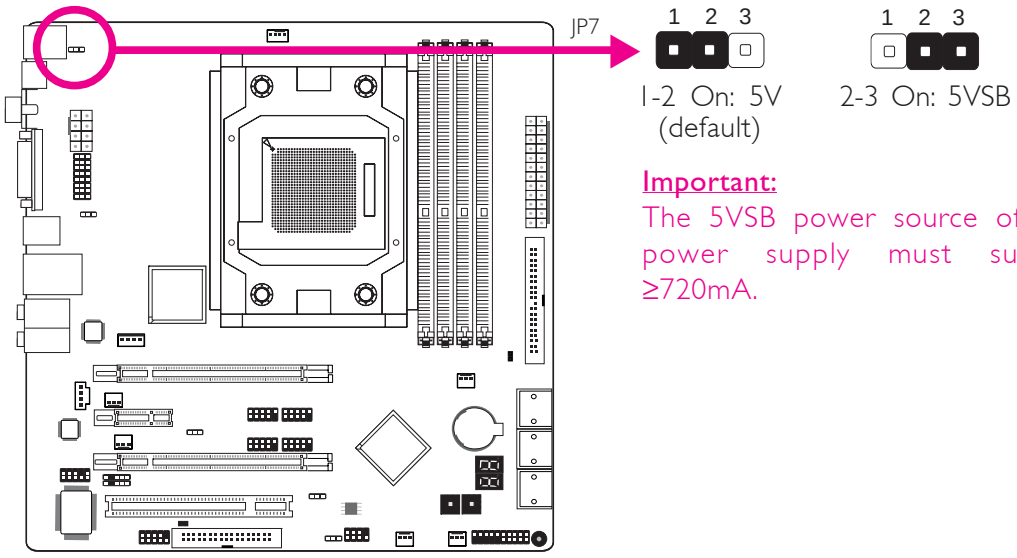
a) *CMOS data becomes corrupted.*
b) *You forgot the supervisor or user password.*
c) *The overclocked settings in the BIOS resulted to the system's instability or caused system boot up problems.*

you can reconfigure the system with the default values stored in the ROM BIOS.

To load the default values stored in the ROM BIOS, please follow the steps below.

1. Power-off the system then unplug the power cord.
2. Set JP10 pins 2 and 3 to On. Wait for a few seconds and set JP10 back to its default setting, pins 1 and 2 On.
3. Now plug the power cord then power-on the system.

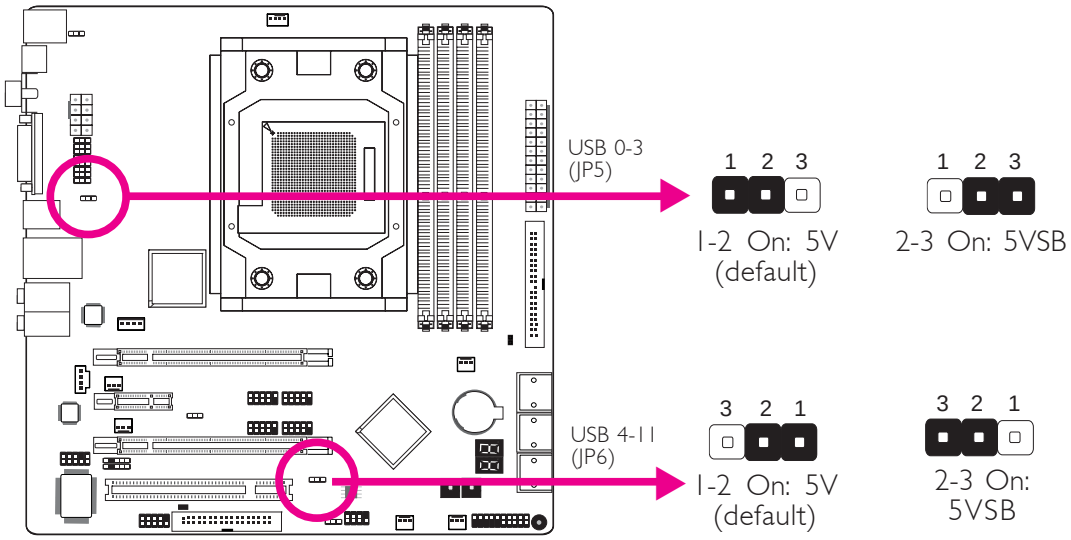
PS/2 Power Select



Important:
The 5VSB power source of your power supply must support ≥720mA.

Selecting 5VSB will allow you to use the PS/2 keyboard or PS/2 mouse to wake up the system.

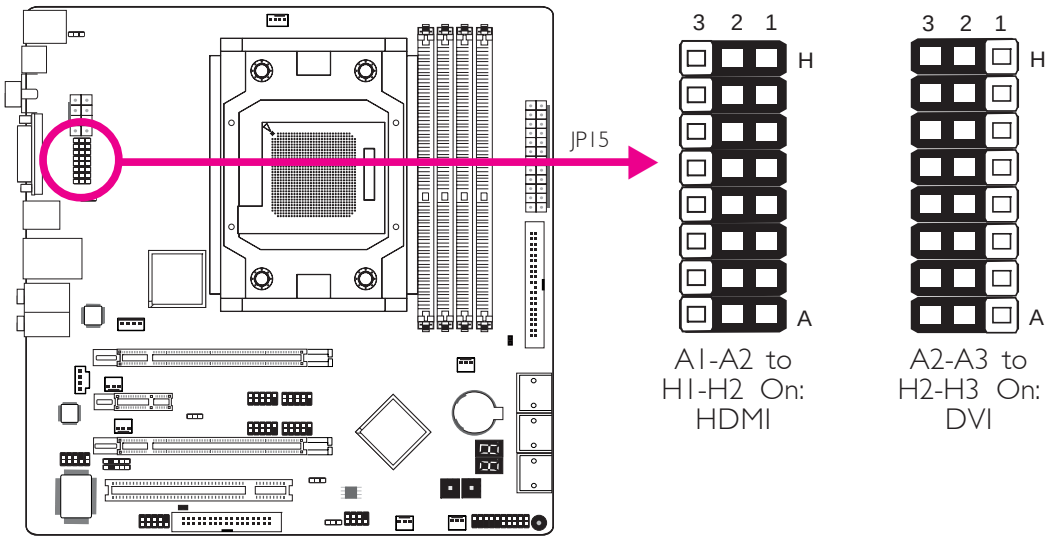
USB Power Select



Selecting 5VSB will allow you to use the USB keyboard or USB mouse to wake up the system..

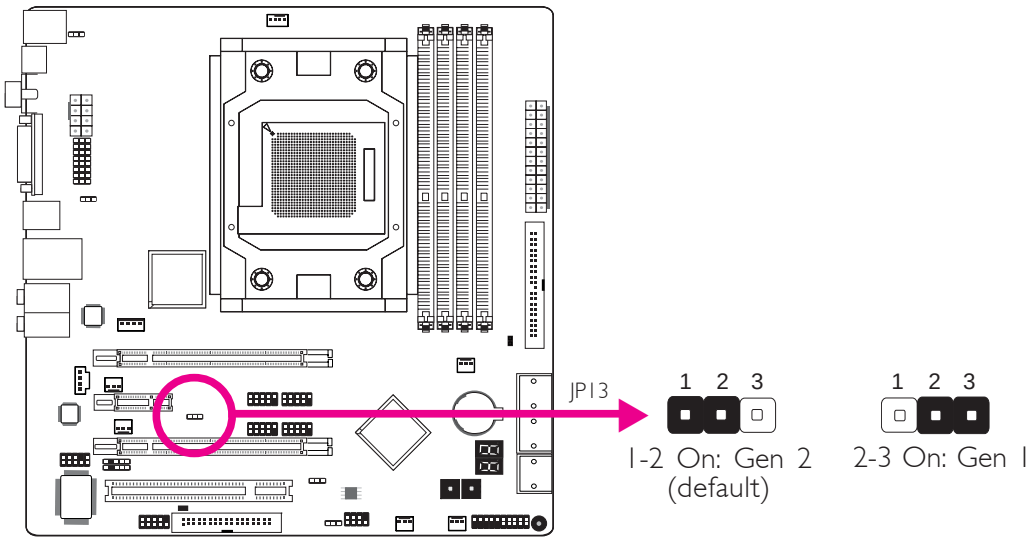
Important:
The 5VSB power source of your power supply must support ≥1.5A (2 devices) or ≥2A (3 or more devices).

HDMI/DVI Select



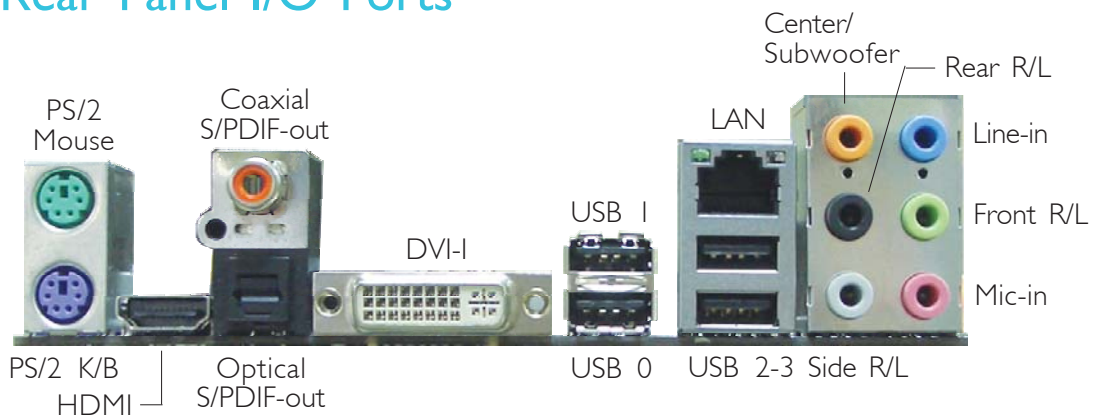
The system board is equipped with HDMI and DVI interfaces but you can only connect one display device at a time. Set this jumper according to the type of display device connected to the system.

PCIE Gen 1 / Gen 2 Select

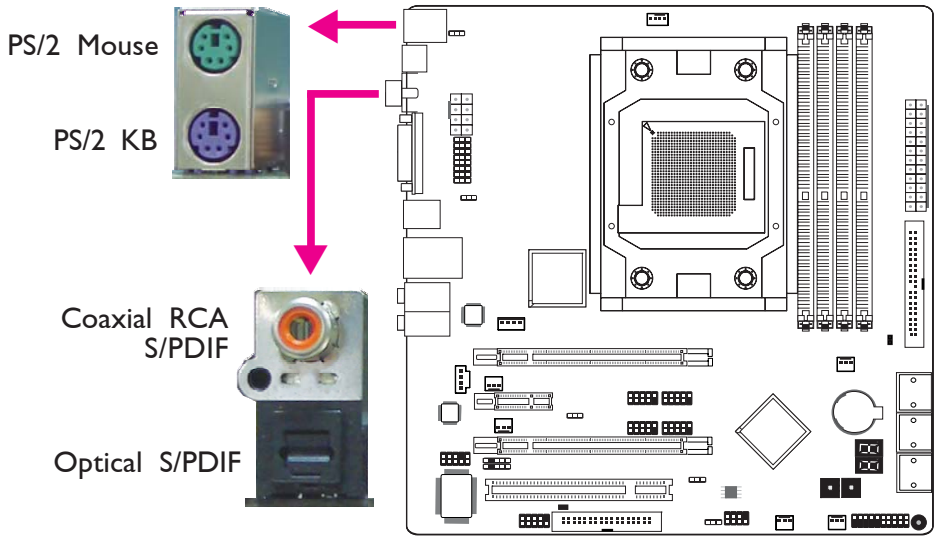


Set this jumper according to the type of PCI Express card that you are using.

Rear Panel I/O Ports



PS/2 Ports and S/PDIF Ports



PS/2 Mouse and PS/2 Keyboard Ports

These ports are used to connect a PS/2 mouse and a PS/2 keyboard.

Optical S/PDIF

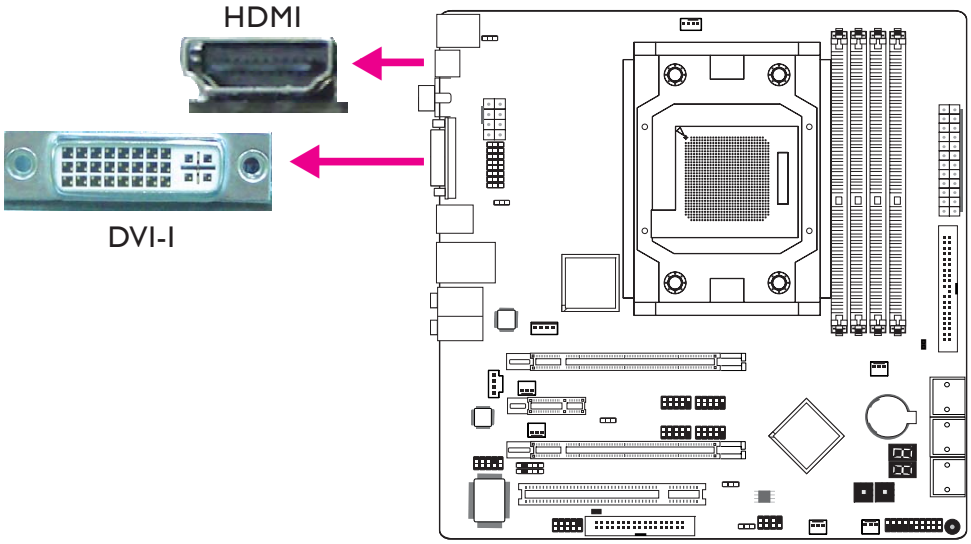
The optical S/PDIF jack is used to connect an external audio output device using an optical S/PDIF cable.

Coaxial RCA S/PDIF

The coaxial RCA S/PDIF jack is used to connect an external audio output device using a coaxial S/PDIF cable.

Important:
DO NOT use optical S/PDIF and Coaxial RCA S/PDIF at the same time.

HDMI and DVI-I Ports



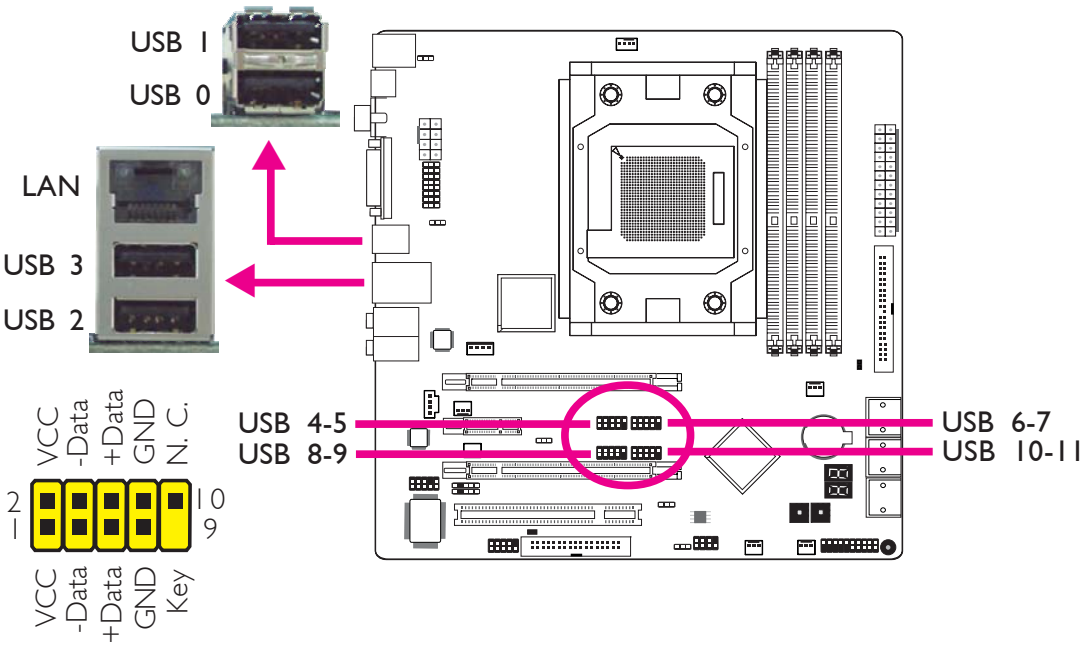
HDMI

The HDMI port which carries both digital audio and video signals is used to connect a LCD monitor or digital TV that has the HDMI port.

DVI-I

The DVI-I port is used to connect a digital LCD monitor or LCD TV.

USB and LAN Ports



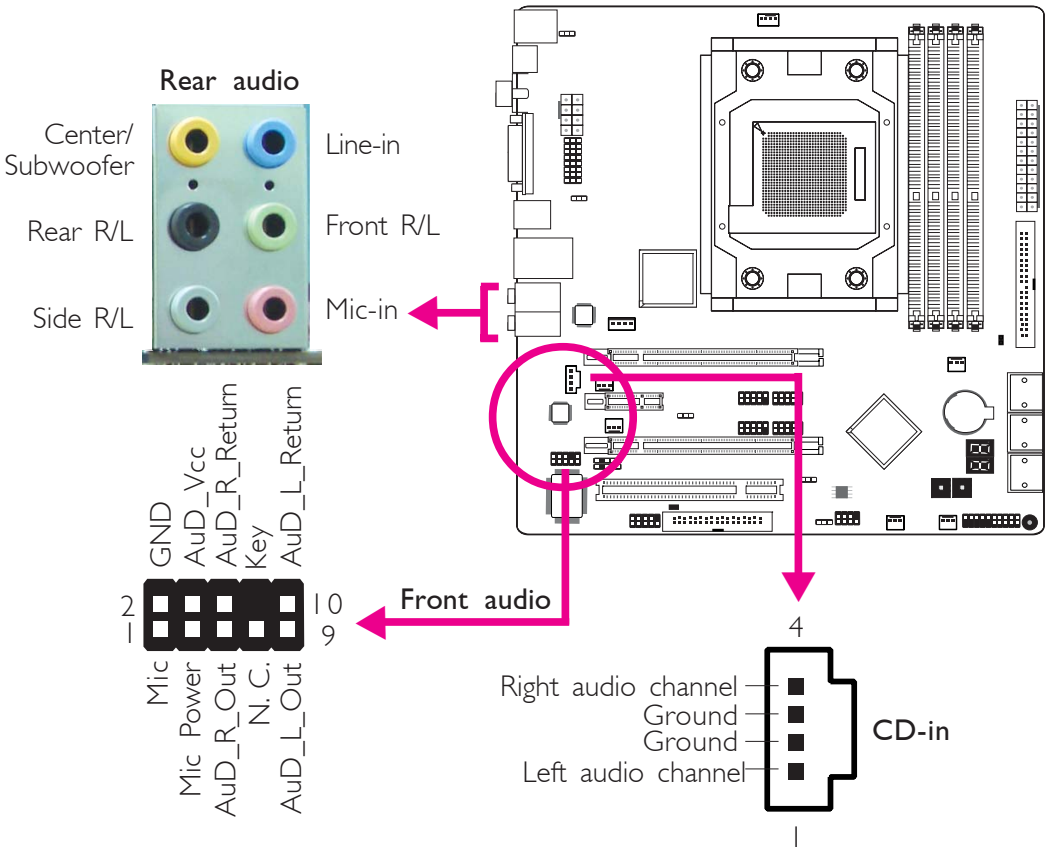
USB

The USB ports are used to connect USB 2.0/1.1 devices. The 10-pin connectors allow you to connect 8 additional USB 2.0/1.1 ports. Your USB ports may come mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then connect the USB port cables to these connectors.

LAN

The LAN port allows the system board to connect to a local area network by means of a network hub.

Audio and CD-In



Rear Panel Audio

Center/Subwoofer Jack (Orange)
This jack is used to connect to the center and subwoofer speakers of the audio system.

Rear Right/Left Jack (Black)
This jack is used to connect to the rear right and rear left speakers of the audio system.

Side Right/Left Jack (Gray)
This jack is used to connect to the side left and side right speakers of the audio system.

Line-in (Light Blue)
This jack is used to connect any audio devices such as Hi-fi set, CD player, tape player, AM/FM radio tuner, synthesizer, etc.

Line-out - Front Right/Left Jack (Lime)
This jack is used to connect to the front right and front left speakers of the audio system.

Mic-in Jack (Pink)
This jack is used to connect an external microphone.

Front Audio

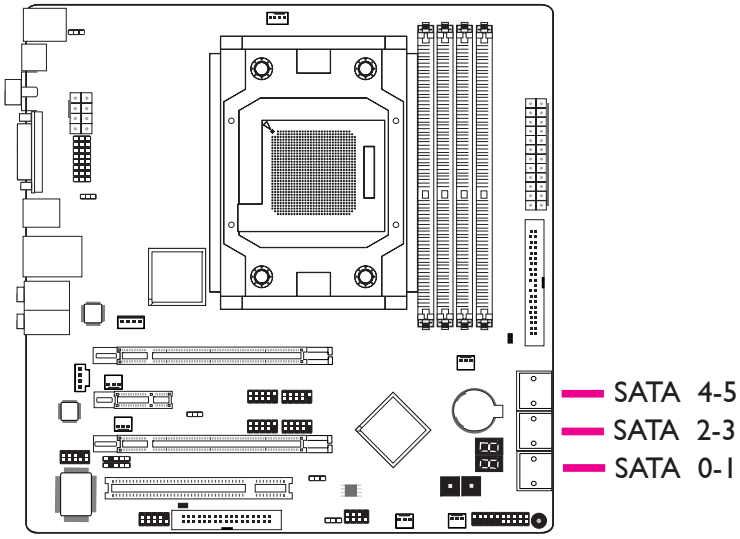
The front audio connector is used to connect to the line-out and mic-in jacks that are at the front panel of your system.

CD-in

The CD-in connector is used to receive audio from a CD-ROM drive, TV tuner or MPEG card.

Internal I/O Connectors

Serial ATA Connectors

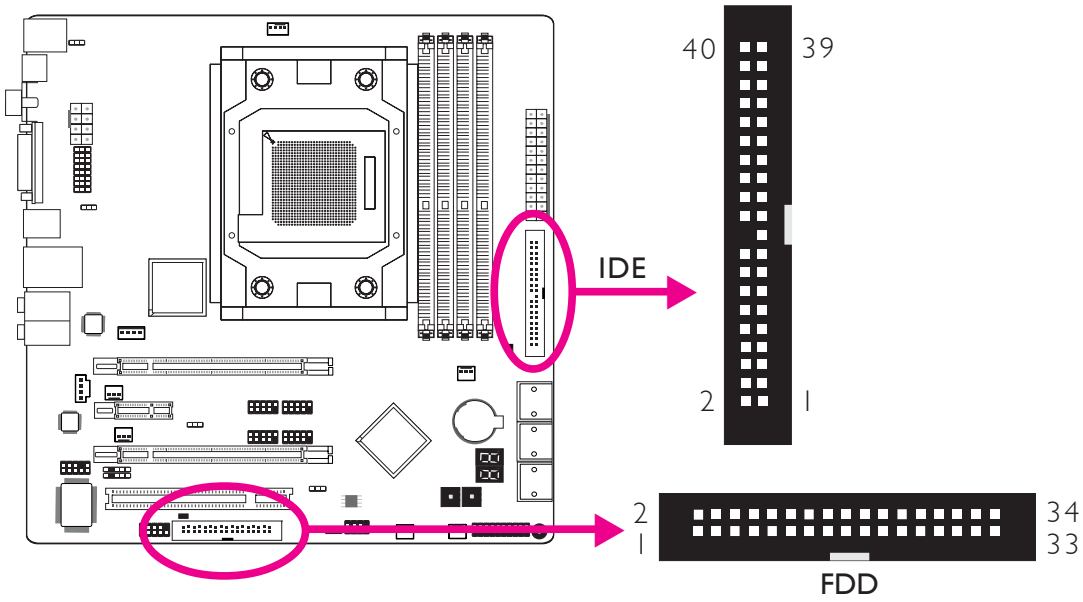


The Serial ATA (SATA) connectors are used to connect Serial ATA drives. Connect one end of the Serial ATA cable to a Serial ATA connector and the other end to your Serial ATA device.

Configuring RAID

Refer to the RAID chapter in this manual for more information about creating RAID on Serial ATA drives.

FDD Connector and IDE Connector



FDD Connector

The floppy disk drive connector is used to connect a floppy drive. Insert one end of the floppy cable into this connector and the other end-most connector to the floppy drive. The colored edge of the cable should align with pin 1 of this connector.

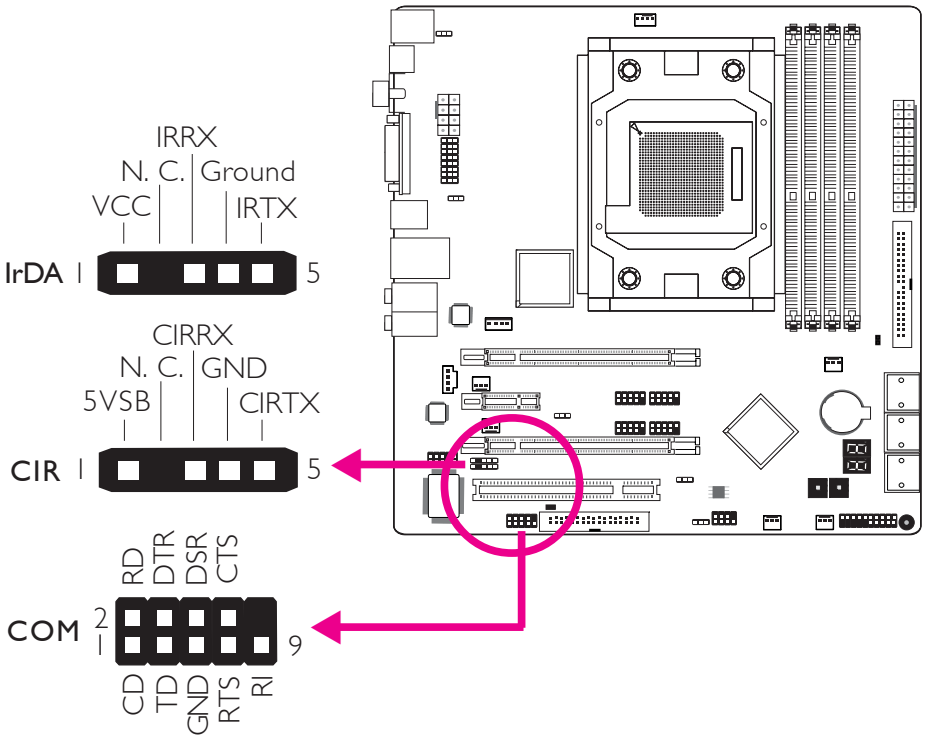
IDE Connector

The IDE disk drive connector is used to connect 2 IDE disk drives. An IDE cable have 3 connectors on them, one that plugs into this connector and the other 2 connects to IDE devices. The connector at the end of the cable is for the Master drive and the connector in the middle of the cable is for the Slave drive. The colored edge of the cable should align with pin 1 of this connector.

Note:

When using two IDE drives, one must be set as the master and the other as the slave. Follow the instructions provided by the drive manufacturer for setting the jumpers and/or switches on the drives.

IrDA,CIR and Serial (COM) Connectors



IrDA and CIR

Connect the cable connector from your IrDA module to the IrDA connector or CIR connector.

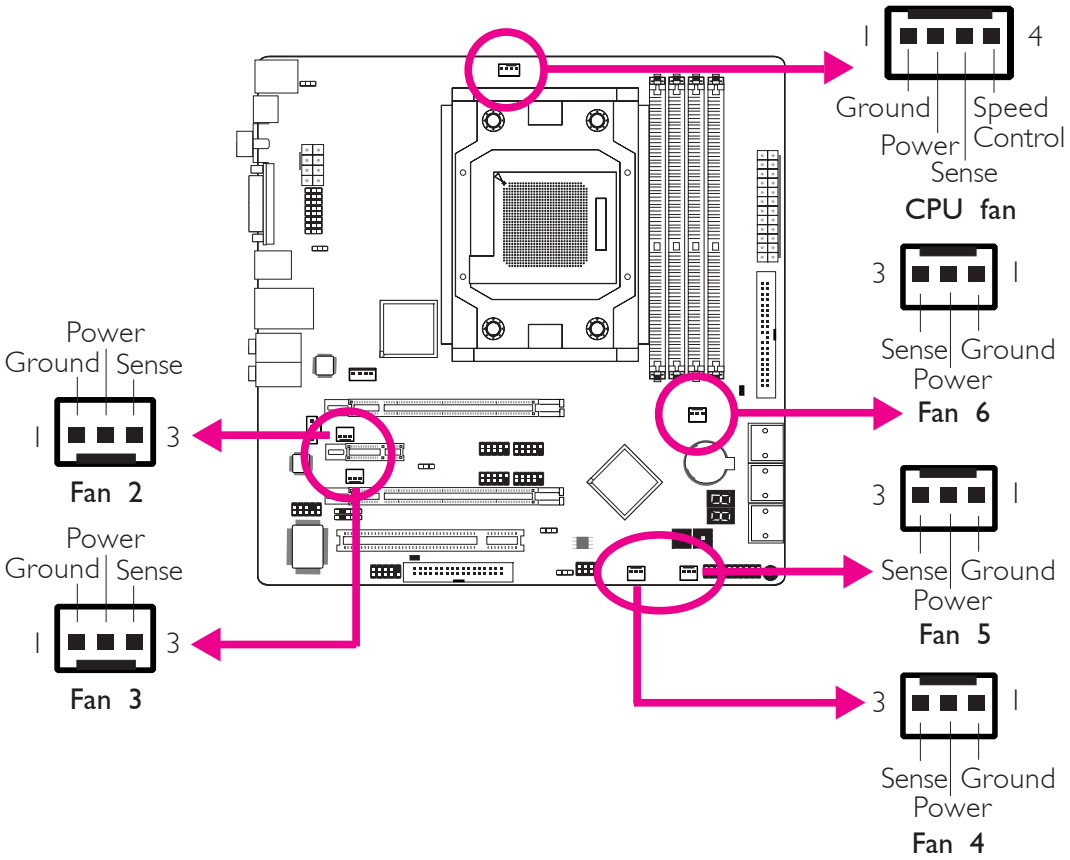
Note:
The sequence of the pin functions on some IrDA/CIR cable may be reversed from the pin function defined on the system board. Make sure to connect the cable connector to the IrDA/CIR connector according to their pin functions.

You may need to install the proper drivers in your operating system to use the IrDA/CIR function. Refer to your operating system's manual or documentation for more information.

Serial (COM)

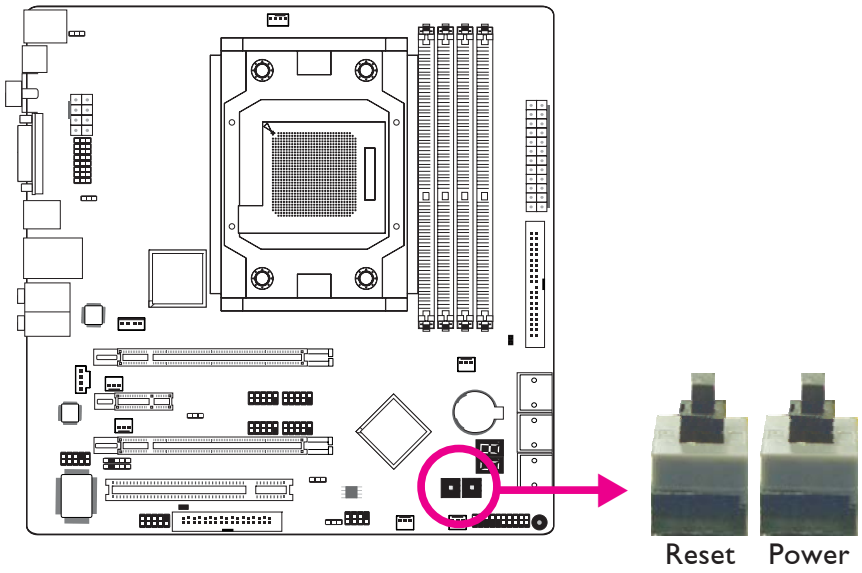
The serial (COM) connector is used to connect modems, serial printers, remote display terminals, or other serial devices. Your COM port may come mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then connect the serial port cable to this connector. The colored edge of the cable should align with pin 1 of this connector.

Cooling Fan Connectors



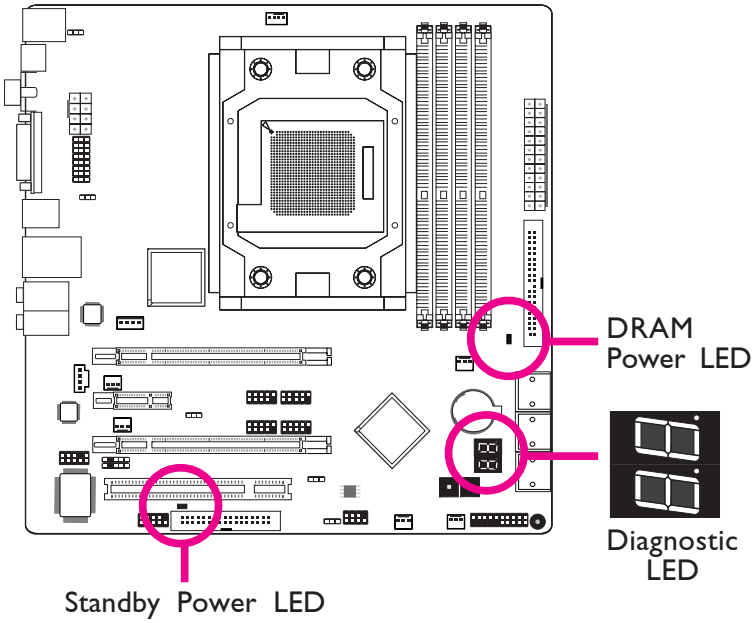
These fan connectors are used to connect cooling fans. Cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

EZ Touch Switches



The presence of the power switch and reset switch on the system board are user-friendly especially to DIY users. They provide convenience in powering on and/or resetting the system while fine tuning the system board before it is installed into the system chassis.

LEDs



DRAM Power LED

This LED will light when the system's power is on.

Standby Power LED

This LED will light when the system is in the standby mode.

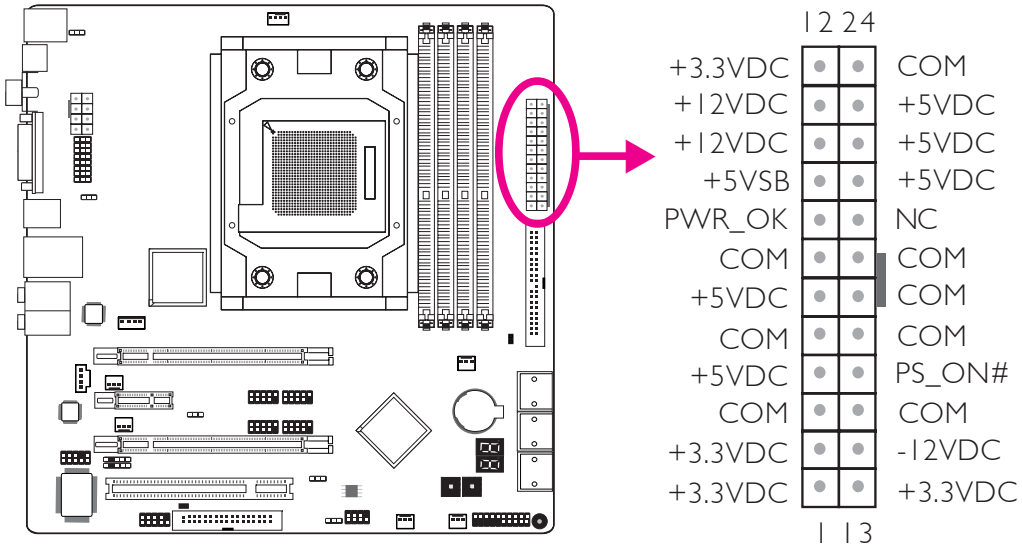
Diagnostic LED

The Diagnostic LED displays POST codes. POST (Power-On Self Tests) which is controlled by the BIOS is performed whenever you power-on the system. POST will detect the status of the system and its components. Each code displayed on the LED corresponds to a certain system status.

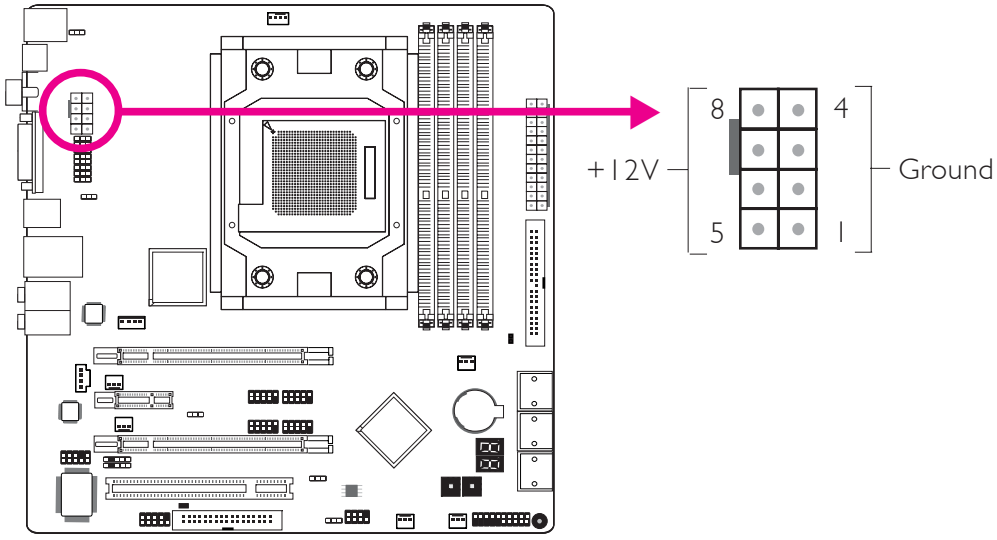
Warning:
When the DRAM Power LED and/or Standby Power LED lit red, it indicates that power is present on the DIMM sockets and/or PCI slots. Power-off the PC then unplug the power cord prior to installing any memory modules or add-in cards. Failure to do so will cause severe damage to the motherboard and components.

Power Connectors

Use a power supply that complies with the ATX12V Power Supply Design Guide Version 1.1. An ATX12V power supply unit has a standard 24-pin ATX main power connector that must be inserted into this connector.

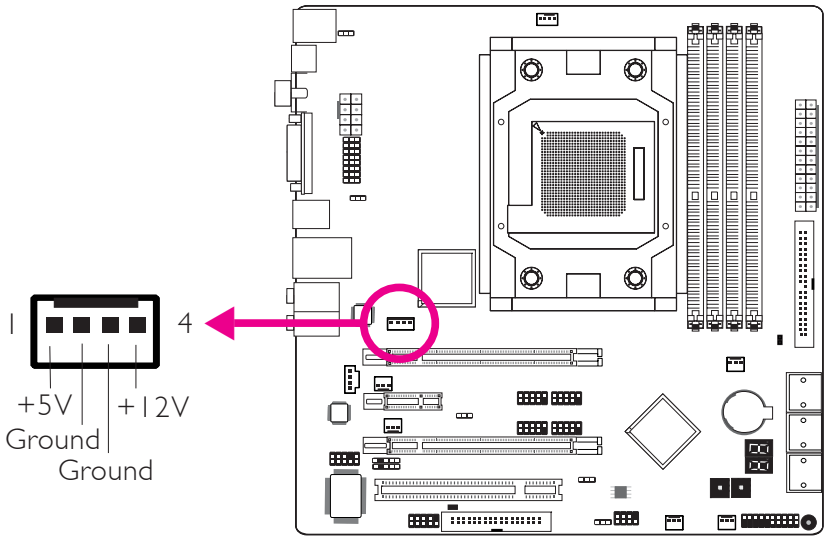


Your power supply unit may come with an 8-pin or 4-pin +12V power connector. The +12V power enables the delivery of more +12VDC current to the processor's Voltage Regulator Module (VRM). If available, it is preferable to use the 8-pin power; otherwise connect a 4-pin power to this connector.



The power connectors from the power supply unit are designed to fit the 24-pin and 8-pin connectors in only one orientation. Make sure to find the proper orientation before plugging the connectors.

The FDD-type power connector is an additional power connector. If you are using more than one graphics cards, we recommend that you plug a power cable from your power supply unit to the 5V/12V power connector. This will provide more stability to the entire system. The system board will still work even if the additional power connector is not connected.



The system board requires a minimum of 300 Watt power supply to operate. Your system configuration (CPU power, amount of memory, add-in cards, peripherals, etc.) may exceed the minimum power requirement. To ensure that adequate power is provided, **we strongly recommend that you use a minimum of 400 Watt (or greater) power supply.**

Important:

Insufficient power supplied to the system may result in instability or the add-in boards and peripherals not functioning properly. Calculating the system's approximate power usage is important to ensure that the power supply meets the system's consumption requirements.

Restarting the PC

Normally, you can power-off the PC by:

1. Pressing the power button at the front panel of the chassis.
   or
2. Pressing the power switch that is on the system board (note: not all system boards come with this switch).

If for some reasons you need to totally cut off the power supplied to the PC, switch off the power supply or unplug the power cord. Take note though that if you intend to restart it at once, please strictly follow the steps below.

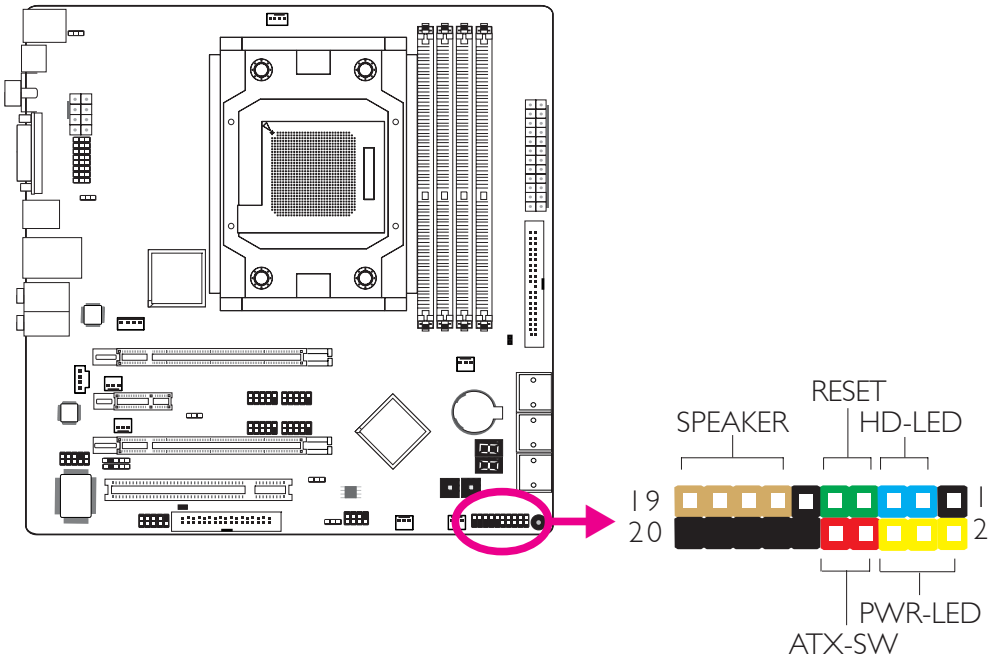
1. The time where power is totally discharged varies among power supplies. It's discharge time is highly dependent on the system's configuration such as the wattage of the power supply, the sequence of the supplied power as well as the number of peripheral devices connected to the system. Due to this reason, we strongly recommend that you wait for the Standby Power LED (refer to the "LEDs" section in this chapter for the location of the Standby Power LED) to lit off.

2. After the Standby Power LED has lit off, wait for 6 seconds before powering on the PC.

   If the system board is already enclosed in a chassis which apparently will not make the Standby Power LED visible, wait for 15 seconds before you restore power connections. 15 seconds is approximately the time that will take the LED to lit off and the time needed before restoring power.

The above will ensure protection and prevent damage to the motherboard and components.

Front Panel Connectors



HD-LED: Primary/Secondary IDE LED

This LED will light when the hard drive is being accessed.

RESET: Reset Switch

This switch allows you to reboot without having to power off the system thus prolonging the life of the power supply or system.

SPEAKER: Speaker Connector

This connects to the speaker installed in the system chassis.

ATX-SW: ATX Power Switch

Depending on the setting in the BIOS setup, this switch is a "dual function power button" that will allow your system to enter the Soft-Off or Suspend mode.

PWR-LED: Power/Standby LED

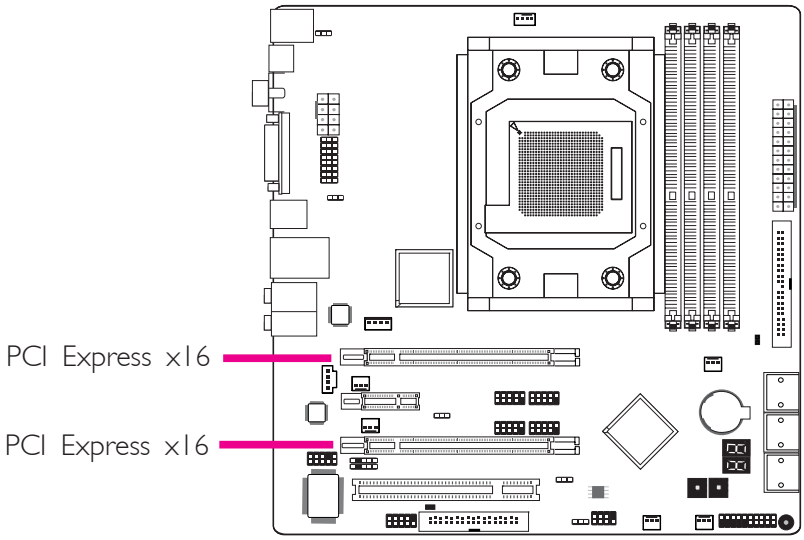
When the system's power is on, this LED will light. When the system is in the S1 (POS - Power On Suspend) or S3 (STR - Suspend To RAM) state, it will blink every second.

Note:

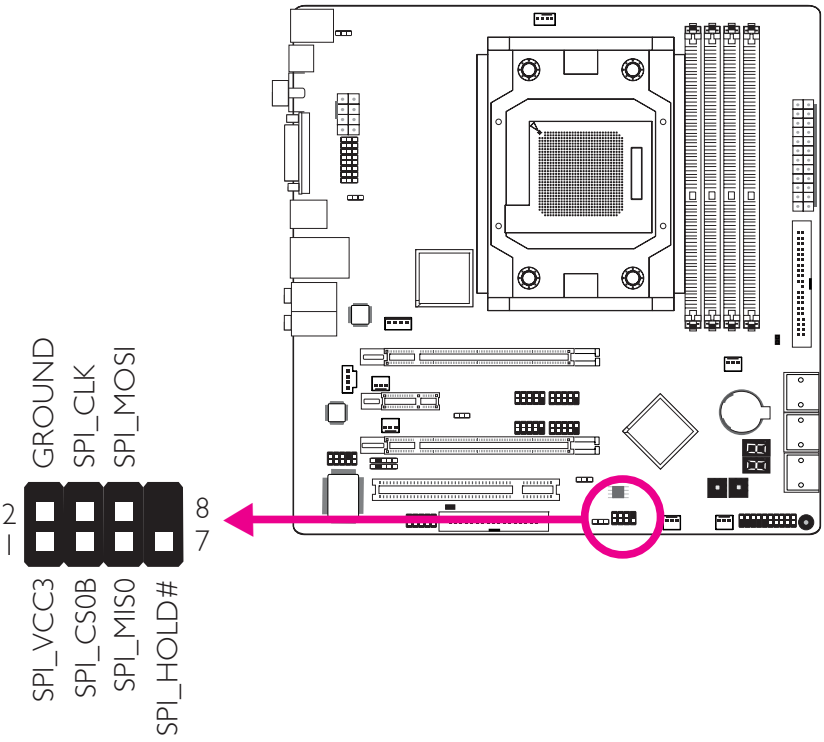
If a system did not boot-up and the Power/Standby LED did not light after it was powered-on, it may indicate that the CPU or memory module was not installed properly. Please make sure they are properly inserted into their corresponding socket.

	Pin	Pin Assignment
HD-LED (Primary/Secondary IDE LED)	3 5	HDD LED Power HDD
Reserved	14 16	N. C. N. C.
ATX-SW (ATX power switch)	8 10	PWRBT+ PWRBT-
Reserved	18 20	N. C. N. C.
RESET (Reset switch)	7 9	Ground H/W Reset
SPEAKER (Speaker connector)	13 15 17 19	Speaker Data N. C. Ground Speaker Power
PWR-LED (Power/Standby LED)	2 4 6	LED Power (+) LED Power (+) LED Power (-) or Standby Signal

PCI Express Slots



Download Flash BIOS Connector



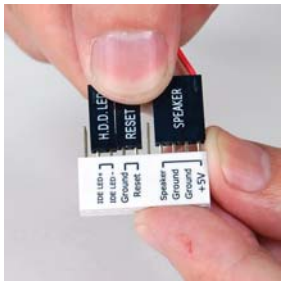
Smart Connectors

The Smart Connectors (USB, IEEE 1394 and Front Panel) serve as extended connectors allowing you to easily connect cables to the connectors that are on the system board. This is specially advantageous when using the front panel connectors as this will prevent wrong cable connection.

USB 1394 Front Panel

Front Panel Connectors

1. Connect all front panel cables from the chassis to the front panel smart connector. Connect according to the pin definition shown on the smart connector.



2. Connect the front panel smart connector to the front panel connector on the system board.

USB and IEEE 1394 Connectors

1. Connect your USB/1394 port cable to the USB/1394 smart connector. Connect according to the pin definition shown on the smart connector.

2. Connect the USB/1394 smart connector to the respective connectors on the system board.

Chapter 3 - BIOS Setup

Switchable Modes for Overclocking

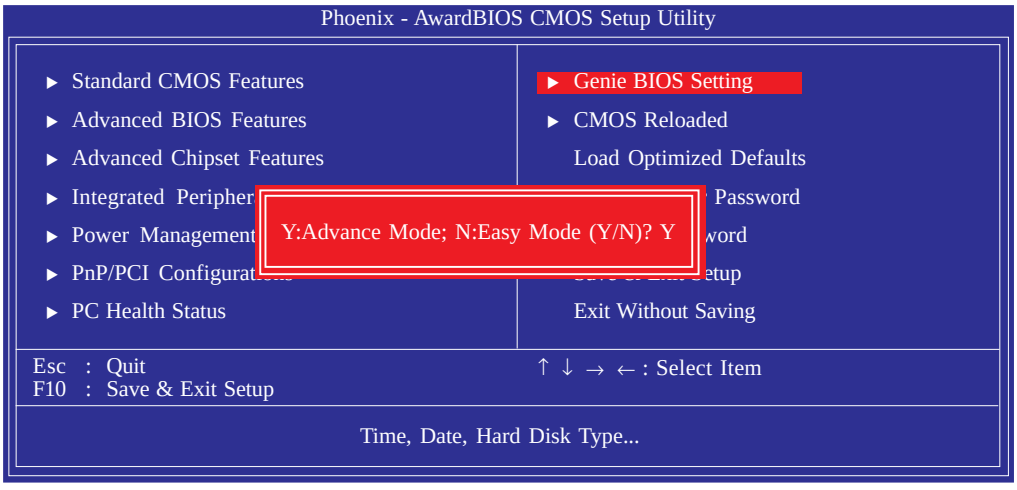
Aimed to provide convenience and superb overclockability, the Genie BIOS Setting submenu comes available in Easy mode (default mode) and Advance mode.

Easy Mode

Easy mode displays fields commonly used by users.

Advance Mode

If you intend to tweak your PC or boost its overclock feature, you can switch the Genie BIOS Setting submenu from Easy mode to Advance mode by simply pressing <F9> in the main menu of the Award BIOS utility then pressing <Y> to select Advance Mode. The Advance mode will display a wide range of fields useful in overclocking the board.



Award BIOS Setup Utility

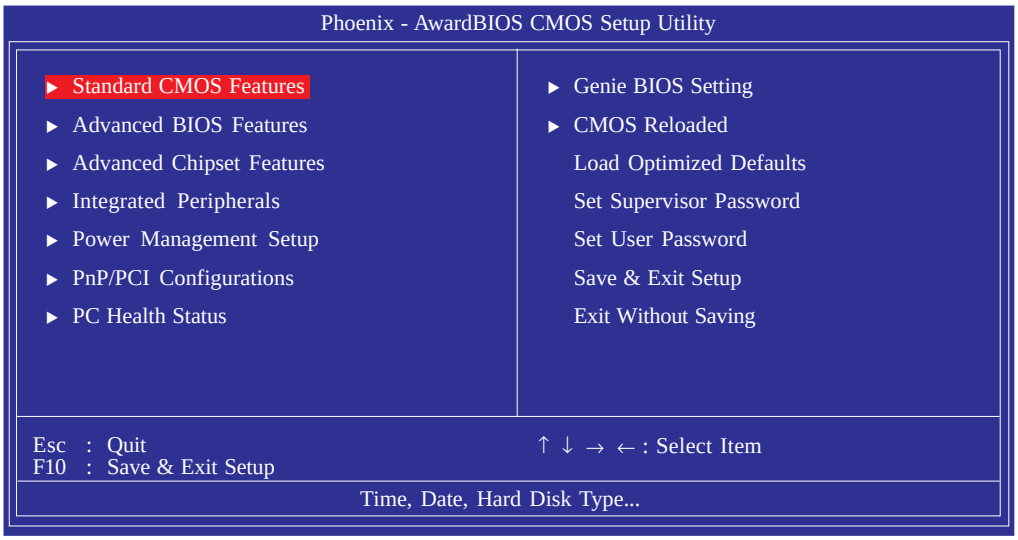
The Basic Input/Output System (BIOS) is a program that takes care of the basic level of communication between the processor and peripherals. In addition, the BIOS also contains codes for various advanced features found in this system board. This chapter explains the Setup Utility for the Award BIOS.

After you power up the system, the BIOS message appears on the screen and the memory count begins. After the memory test, the following message will appear on the screen:

Press DEL to enter setup

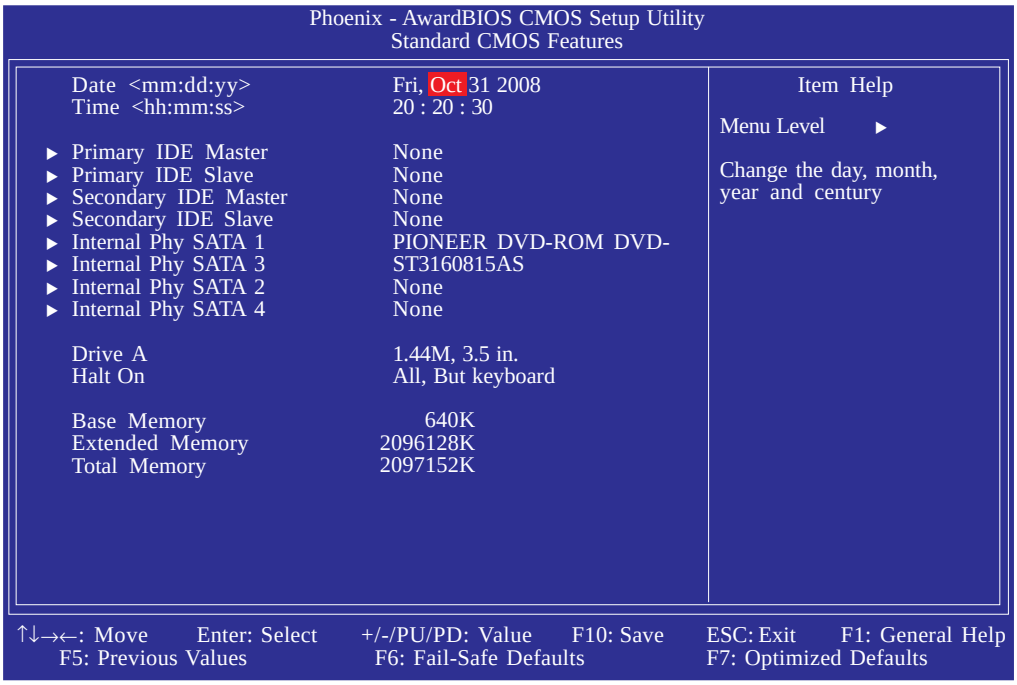
If the message disappears before you respond, restart the system or press the "Reset" button. You may also restart the system by pressing the <Ctrl> <Alt> and <Del> keys simultaneously.

When you press <Del>, the main menu screen will appear.



Standard CMOS Features

Use the arrow keys to highlight "Standard CMOS Features" then press <Enter>. A screen similar to the one below will appear.


Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Date <mm:dd:yy> Fri, Oct 31 2008
Time <hh:mm:ss> 20 : 20 : 30
Primary IDE Master None
Primary IDE Slave None
Secondary IDE Master None
Secondary IDE Slave None
Internal Phy SATA 1 PIONEER DVD-ROM DVD-
Internal Phy SATA 3 ST3160815AS
Internal Phy SATA 2 None
Internal Phy SATA 4 None
Drive A 1.44M, 3.5 in.
Halt On All, But keyboard
Base Memory 640K
Extended Memory 2096128K
Total Memory 2097152K
Item Help
Menu Level ▶
Change the day, month, year and century
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1994 to 2079.

Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

Primary IDE Master to Internal Phy SATA 4

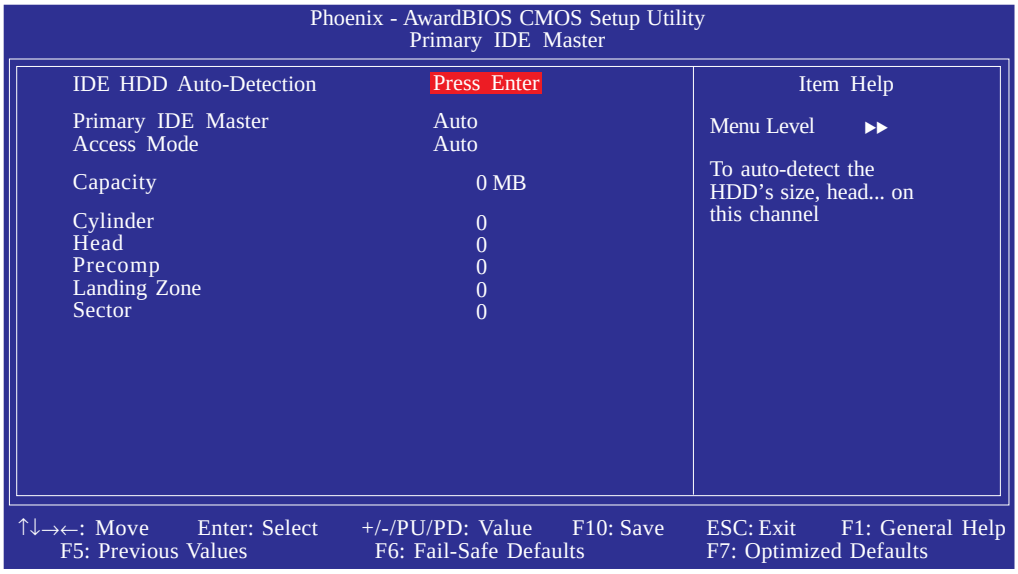
Primary IDE Master/Slave
Secondary IDE Master/Slave
— Used to configure Parallel ATA drives

Internal Phy SATA 1
Internal Phy SATA 3
Internal Phy SATA 2
Internal Phy SATA 4
— Used to configure Serial ATA drives

Note:
The fields for configuring Serial ATA drives will appear only if the Serial ATA function is Enabled. Enable this function in the Integrated Peripherals submenu of the BIOS.

Primary IDE Master to Secondary IDE Slave

To configure IDE drives, move the cursor to a field then press <Enter>. The following screen will appear.



The settings on the screen are for reference only. Your version may not be identical to this one.

IDE HDD Auto-Detection

Detects the parameters of the drive. The parameters will automatically be shown on the screen.

Primary IDE Master to Secondary IDE Slave

The drive type information should be included in the documentation from your hard disk vendor. If you select "Auto", the BIOS will auto-detect the HDD & CD-ROM drive at the POST stage and show the IDE for the HDD & CD-ROM drive. If a hard disk has not been installed, select "None".

Access Mode

For hard drives larger than 528MB, you would typically select the LBA type. Certain operating systems require that you select CHS or Large. Please check your operating system's manual or Help desk on which one to select.

Capacity

Displays the approximate capacity of the disk drive. Usually the size is slightly greater than the size of a formatted disk given by a disk checking program.

Cylinder

This field displays the number of cylinders.

Head

This field displays the number of read/write heads.

Precomp

This field displays the number of cylinders at which to change the write timing.

Landing Zone

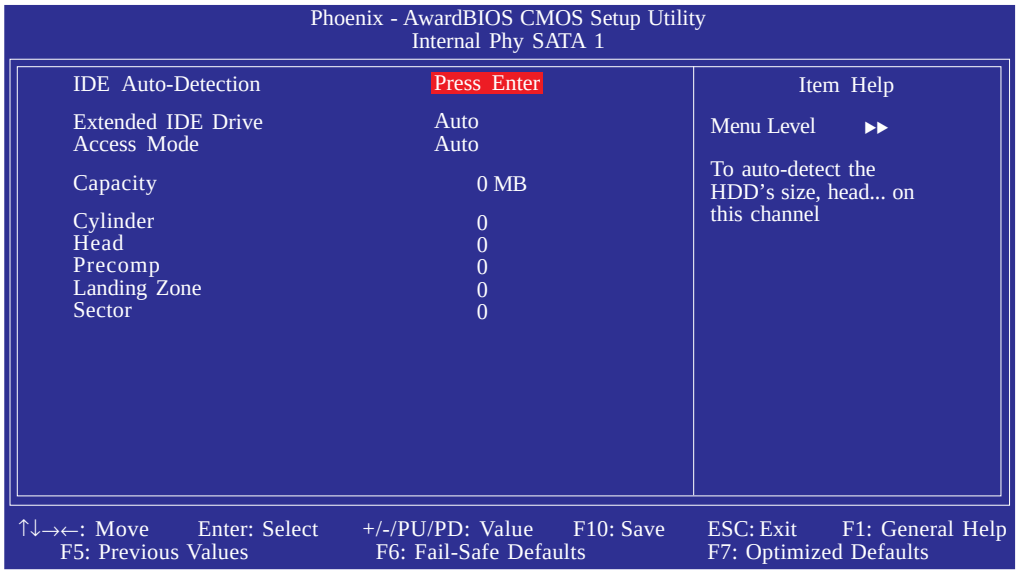
This field displays the number of cylinders specified as the landing zone for the read/write heads.

Sector

This field displays the number sectors per track.

Internal Phy SATA 1 to Internal Phy SATA 4

Move the cursor to a field then press <Enter>. The following screen will appear.



The settings on the screen are for reference only. Your version may not be identical to this one.

Drive A

This field identifies the type of floppy disk drive installed.

None	No floppy drive is installed
360K, 5.25 in.	5-1/4 in. standard drive; 360KB capacity
1.2M, 5.25 in.	5-1/4 in. AT-type high-density drive; 1.2MB capacity
720K, 3.5 in.	3-1/2 in. double-sided drive; 720KB capacity
1.44M, 3.5 in.	3-1/2 in. double-sided drive; 1.44MB capacity
2.88M, 3.5 in.	3-1/2 in. double-sided drive; 2.88MB capacity

Halt On

This field determines whether the system will stop if an error is detected during power up. The default setting is All Errors.

No Errors	The system boot will not stop for any errors detected.
All Errors	The system boot will stop whenever the BIOS detects a non-fatal error.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a disk or keyboard error; it will stop for all other errors.

Base Memory

Displays the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard or 640K for systems with 640K or more memory installed on the motherboard.

Extended Memory

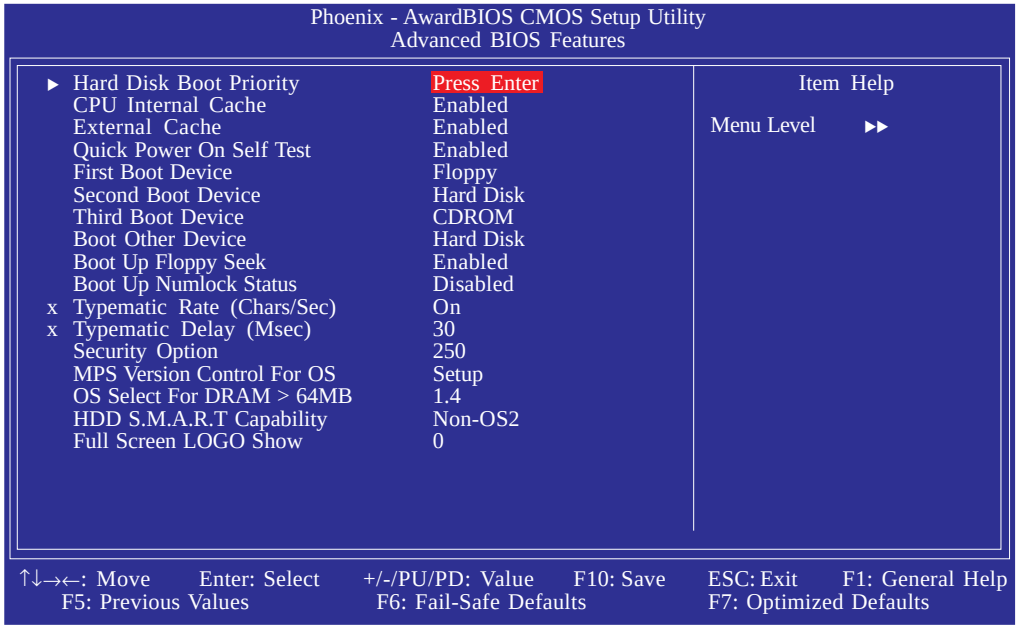
Displays the amount of extended memory detected during boot-up.

Total Memory

Displays the total memory available in the system.

Advanced BIOS Features

The Advanced BIOS Features allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.


Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
▶ Hard Disk Boot Priority Press Enter
CPU Internal Cache Enabled
External Cache Enabled
Quick Power On Self Test Enabled
First Boot Device Floppy
Second Boot Device Hard Disk
Third Boot Device CDROM
Boot Other Device Hard Disk
Boot Up Floppy Seek Enabled
Boot Up Numlock Status Disabled
x Typematic Rate (Chars/Sec) On
x Typematic Delay (Msec) 30
Security Option 250
MPS Version Control For OS Setup
OS Select For DRAM > 64MB 1.4
HDD S.M.A.R.T Capability Non-OS2
Full Screen LOGO Show 0
Item Help
Menu Level ▶▶
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

Hard Disk Boot Priority

Refer to the next subsection for more information on this submenu.

CPU Internal Cache and External Cache

These fields speed up the memory access. The default is Enabled, which provides better performance by enabling cache.

Quick Power On Self Test

This field speeds up Power On Self Test (POST) whenever the system is powered on. The BIOS will shorten or skip some check items during POST. To attain the shortest POST time, select "Fast".

First Boot Device, Second Boot Device, Third Boot Device and Boot Other Device

Select the drive to boot first, second and third in the "First Boot Device" "Second Boot Device" and "Third Boot Device" fields respectively. The BIOS will boot the operating system according to the sequence of the drive selected. Set "Boot Other Device" to Enabled if you wish to boot from another device.

Boot Up Floppy Seek

When enabled, the BIOS will check whether the floppy disk drive installed is 40 or 80 tracks. Note that the BIOS cannot distinguish between 720K, 1.2M, 1.44M and 2.88M drive types as they are all 80 tracks. When disabled, the BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360KB.

Boot Up NumLock Status

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

Typematic Rate (Chars/Sec)

This field allows you to select the rate at which the keys are accelerated.

Typematic Delay (Msec)

This field allows you to select the delay between when the key was first depressed and when the acceleration begins.

Security Option

This field determines when the system will prompt for the password-everytime the system boots or only when you enter the BIOS setup. Set the password in the Set Supervisor/User Password submenu.

System The system will not boot and access to Setup will be denied unless the correct password is entered at the prompt.

Setup The system will boot, but access to Setup will be denied unless the correct password is entered at the prompt.

MPS Version Control for OS

This field is used to select the MPS version that the system board is using.

OS Select for DRAM > 64MB

This field allows you to access the memory that is over 64MB in OS/2.

HDD S.M.A.R.T Capability

The system board supports SMART (Self-Monitoring, Analysis and Reporting Technology) hard drives. SMART is a reliability prediction technology for ATA/IDE and SCSI drives. The drive will provide sufficient notice to the system or user to backup data prior to the drive's failure. The default is Disabled. If you are using hard drives that support S.M.A.R.T., set this field to Enabled. SMART is supported in ATA/33 or later hard drives.

Full Screen Logo Show

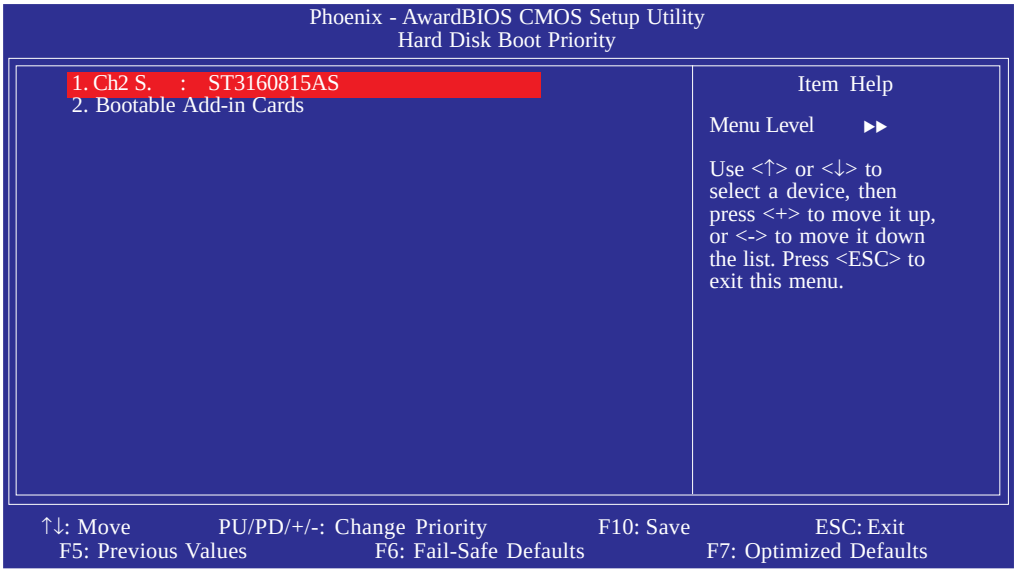
This field is applicable only if you want a particular logo to appear during system boot-up.

Enabled The logo will appear in full screen during system boot-up.

Disabled The logo will not appear during system boot-up.

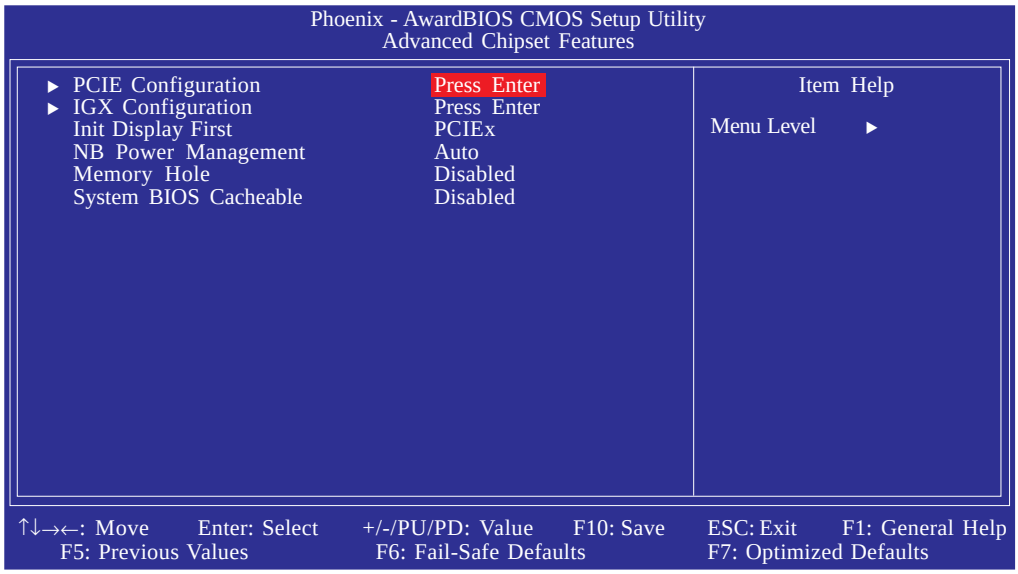
Hard Disk Boot Priority

This field is used to select the boot sequence of the hard drives. Move the cursor to this field then press <Enter>. Use the Up or Down arrow keys to select a device then press <+> to move it up or <-> to move it down the list.


Phoenix - AwardBIOS CMOS Setup Utility
Hard Disk Boot Priority
1. Ch2 S. : ST3160815AS
2. Bootable Add-in Cards
Item Help
Menu Level ▸▸
Use <↑> or <↓> to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.
↑↓: Move
PU/PD/+/-: Change Priority
F10: Save
ESC: Exit
F5: Previous Values
F6: Fail-Safe Defaults
F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

Advanced Chipset Features



The settings on the screen are for reference only. Your version may not be identical to this one.

This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources. **These items should not be altered unless necessary.** The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered some incompatibility or that data was being lost while using your system.

PCIE Configuration

IGX Configuration

Refer to the following pages for more information on these submenus.

Init Display First

IGX When the system boots, it will first initialize the onboard VGA.

PCIEx When the system boots, it will first initialize the PCI Express x16 graphics card.

NB Power Management

Dynamic clock gating for IOC/NT/MCU/CFG. The options are Auto, Enabled and Disabled.

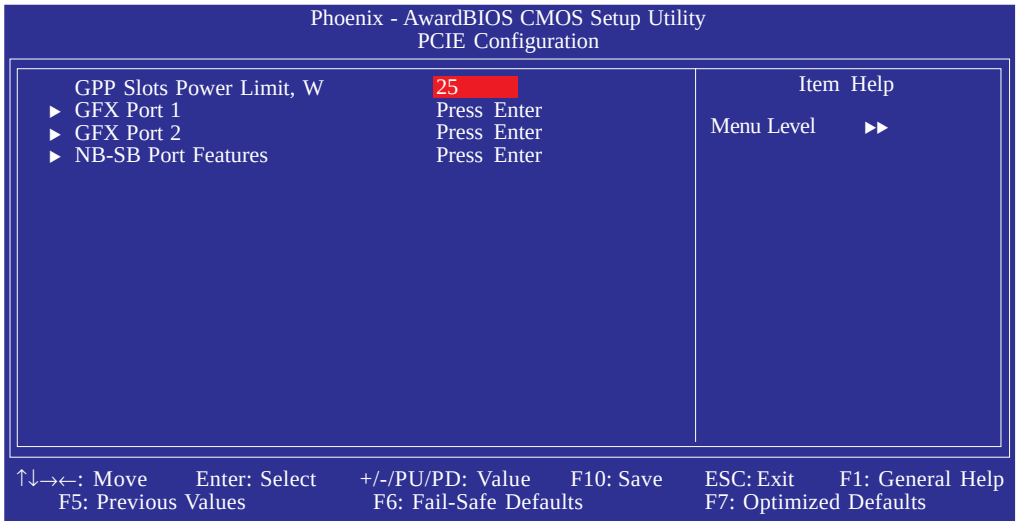
Memory Hole

In order to improve system performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16MB. When enabled, the CPU assumes the 15-16MB memory range is allocated to the hidden ISA address range instead of the actual system DRAM. When disabled, the CPU assumes the 15-16MB address range actually contains DRAM memory. If more than 16MB of system memory is installed, this field must be disabled to provide contiguous system memory.

System BIOS Cacheable

When this field is enabled, accesses to the system BIOS ROM addressed at F0000H-FFFFFH are cached, provided that the cache controller is enabled. The larger the range of the Cache RAM, the higher the efficiency of the system.

PCIE Configuration



The settings on the screen are for reference only. Your version may not be identical to this one.

GPP Slots Power Limit, W

This field is used to enter the GPP's power limit. The minimum is 0 and the maximum is 255.

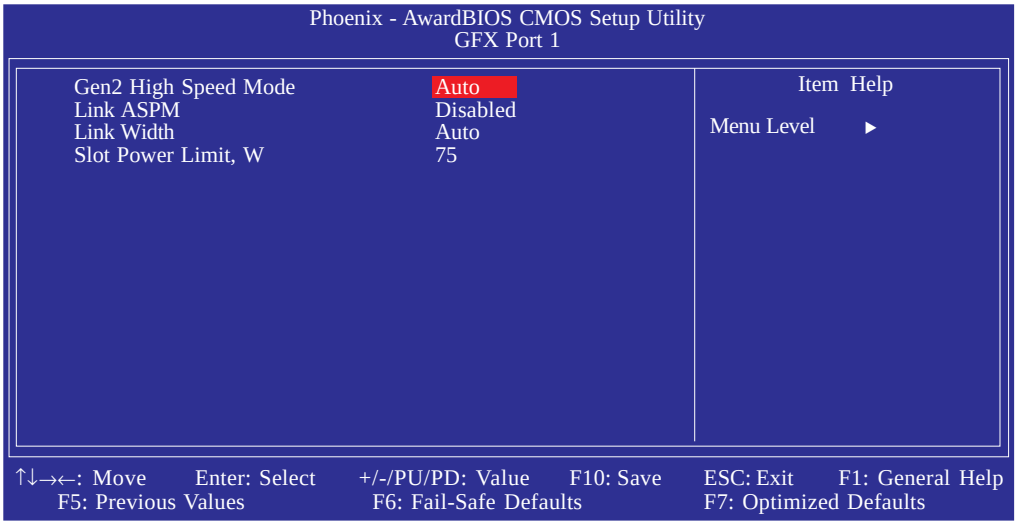
GFX Port 1

GFX Port 2

NB-SB Port Features

Refer to the following pages for more information on these submenus.

GFX Port 1 / GFX Port 2



The settings on the screen are for reference only. Your version may not be identical to this one.

Gen2 High Speed Mode

The options are Auto, Disabled, Software Initiated and Advertised RC.

Link ASPM

The options are Disabled, L0s, L1, and L0s & L1.

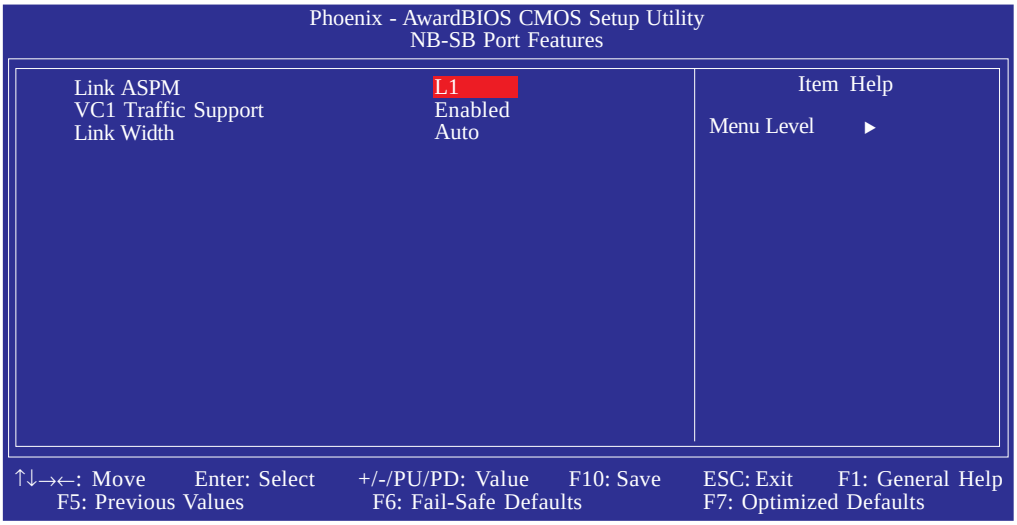
Link Width

The options are Auto, x1, x2, x4 and x8.

Slot Power Limit,W

This field is used to enter the slot's power limit. The minimum is 0 and the maximum is 255.

NB-SB Port Features



The settings on the screen are for reference only. Your version may not be identical to this one.

Link ASPM

The options are Disabled and L1.

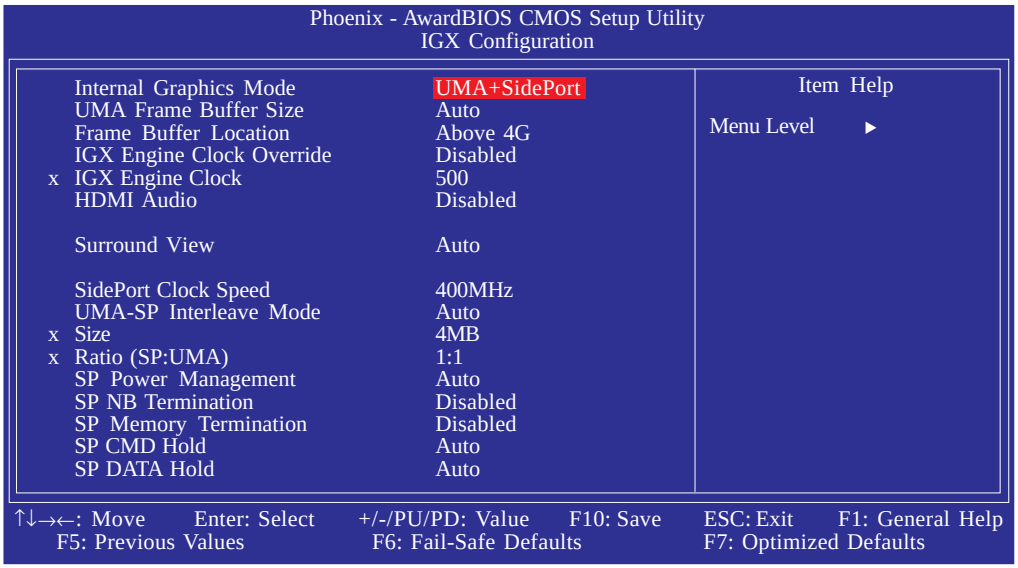
VC1 Traffic Support

The options are Enabled and Disabled.

Link Width

The options are Auto, x1, x2 and x4.

IGX Configuration


Phoenix - AwardBIOS CMOS Setup Utility
IGX Configuration
Internal Graphics Mode UMA+SidePort
UMA Frame Buffer Size Auto
Frame Buffer Location Above 4G
IGX Engine Clock Override Disabled
x IGX Engine Clock 500
HDMI Audio Disabled
Surround View Auto
SidePort Clock Speed 400MHz
UMA-SP Interleave Mode Auto
x Size 4MB
x Ratio (SP:UMA) 1:1
SP Power Management Auto
SP NB Termination Disabled
SP Memory Termination Disabled
SP CMD Hold Auto
SP DATA Hold Auto
Item Help
Menu Level ▶
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

Internal Graphics Mode

This is used to configure the internal graphics mode. The options are Disabled, UMA and UMA+SidePort.

UMA Frame Buffer Size

This is used to select the total amount of system memory locked by the BIOS for video. A larger frame buffer size should result in higher video performance. The options are Auto, 32MB, 64MB, 128MB, 256MB and 512MB.

Frame Buffer Location

This is used to select the frame buffer's location. The options are Below 4G and Above 4G.

IGX Engine Clock Override

The options are Enabled and Disabled.

IGX Engine Clock

This is used to enter the IGX engine clock. The minimum is 150 and the maximum is 1000.

HDMI Audio

This is used to enable or disable the HDMI audio.

Surround View

The options are Auto, Enabled and Disabled.

SidePort Clock Speed

This is used to select the SidePort's clock speed. The options are 200MHz, 266MHz, 333MHz, 400MHz, 533MHz and 667MHz.

UMA-SP Interleave Mode

The options are Auto and Fine.

Size

The options are 4MB, 8MB, 16MB, 32MB, 64MB and 128MB.

Ratio (SP:UMA)

The options are 1:1, 1:3, 1:7, 1:15, 3:5, 3:13, 5:11 and 7:9.

SP Power Management

The options are Auto, Dynamic CKE, Dynamic CMD and Disable.

SP NB Termination

The options are Auto, Enabled and Disabled.

SP Memory Termination

The options are Auto, Enabled and Disabled.

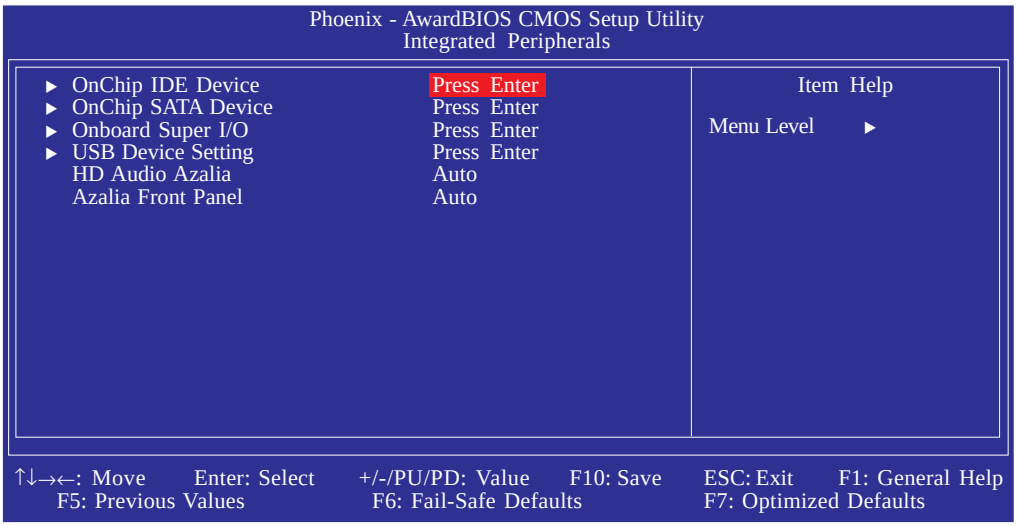
SP CMD to Hold

The options are Auto, Enabled and Disabled.

SP DATA Hold

The options are Auto, Enabled and Disabled.

Integrated Peripherals



The settings on the screen are for reference only. Your version may not be identical to this one.

OnChip IDE Device

OnChip SATA Device

Onboard Super I/O

USB Device Setting

Refer to the following pages for more information on these submenus.

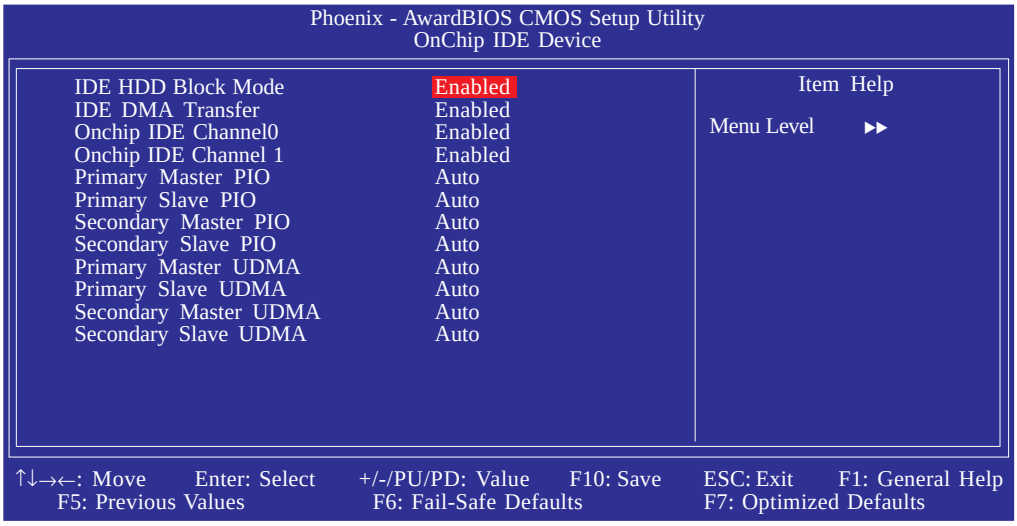
HD Audio Azalia

This field is used to enable or disable the onboard HD audio.

Azalia Front Panel

This field is used to enable or disable the Azalia front panel audio.

OnChip IDE Device


Phoenix - AwardBIOS CMOS Setup Utility
OnChip IDE Device
IDE HDD Block Mode Enabled
IDE DMA Transfer Enabled
Onchip IDE Channel0 Enabled
Onchip IDE Channel 1 Enabled
Primary Master PIO Auto
Primary Slave PIO Auto
Secondary Master PIO Auto
Secondary Slave PIO Auto
Primary Master UDMA Auto
Primary Slave UDMA Auto
Secondary Master UDMA Auto
Secondary Slave UDMA Auto
Item Help
Menu Level ▸▸
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

IDE HDD Block Mode

Enabled The IDE HDD uses the block mode. The system BIOS will check the hard disk drive for the maximum block size the system can transfer. The block size will depend on the type of hard disk drive.

Disabled The IDE HDD uses the standard mode.

IDE DMA Transfer Access

Enabled The IDE HDD uses the block mode. The system BIOS will check the hard disk drive for the maximum block size the system can transfer. The block size will depend on the type of hard disk drive.

Disabled The IDE HDD uses the standard mode.

OnChip IDE Channel 0 and OnChip IDE Channel 1

These fields allow you to enable or disable the primary and secondary IDE controller. The default is Enabled. Select Disabled if you want to add a different hard drive controller.

Primary Master PIO to Secondary Slave PIO

PIO means Programmed Input/Output. Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by themselves. Your system supports five modes, 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode after checking your drive.

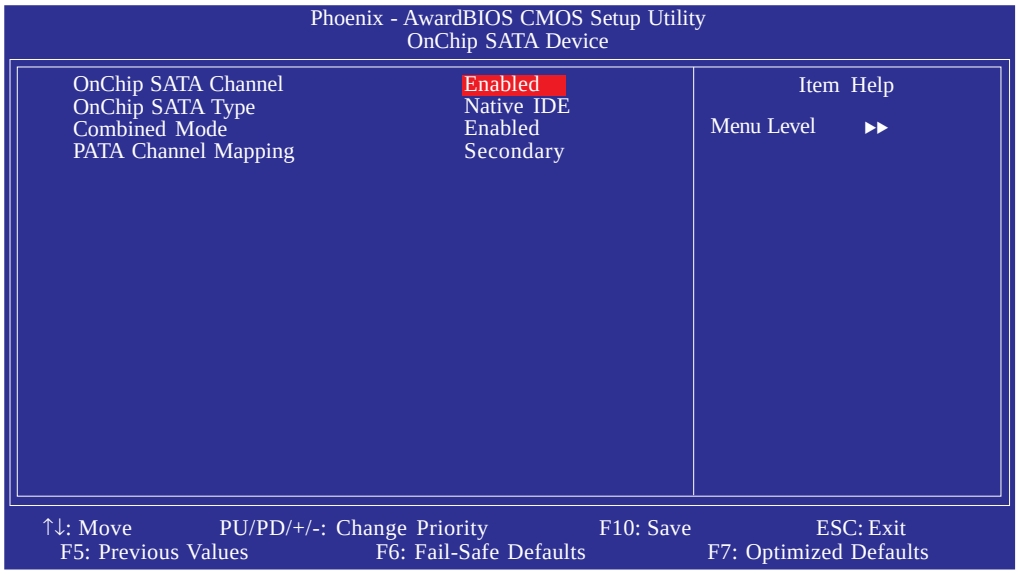
Auto	The BIOS will automatically set the system according to your hard disk drive's timing.
Mode 0-4	You can select a mode that matches your hard disk drive's timing. Caution: Do not use the wrong setting or you will have drive errors.

Primary Master UDMA to Secondary Slave UDMA

These fields allow you to set the Ultra DMA in use. When Auto is selected, the BIOS will select the best available option after checking your hard drive or CD-ROM.

Auto	The BIOS will automatically detect the settings for you.
Disabled	The BIOS will not detect these categories.

OnChip SATA Device



The settings on the screen are for reference only. Your version may not be identical to this one.

OnChip SATA Channel

This field is used to enable or disable the onboard SATA.

OnChip SATA Type

This field is used to configure the SATA devices supported by the southbridge.

Native IDE This option configures the Serial ATA drives as Parallel ATA storage devices.

RAID This option allows you to create RAID on Serial ATA devices.

AHCI This option allows the Serial ATA devices to use AHCI (Advanced Host Controller Interface).

Legacy IDE This option configures the Serial ATA drives as Legacy IDE storage devices.

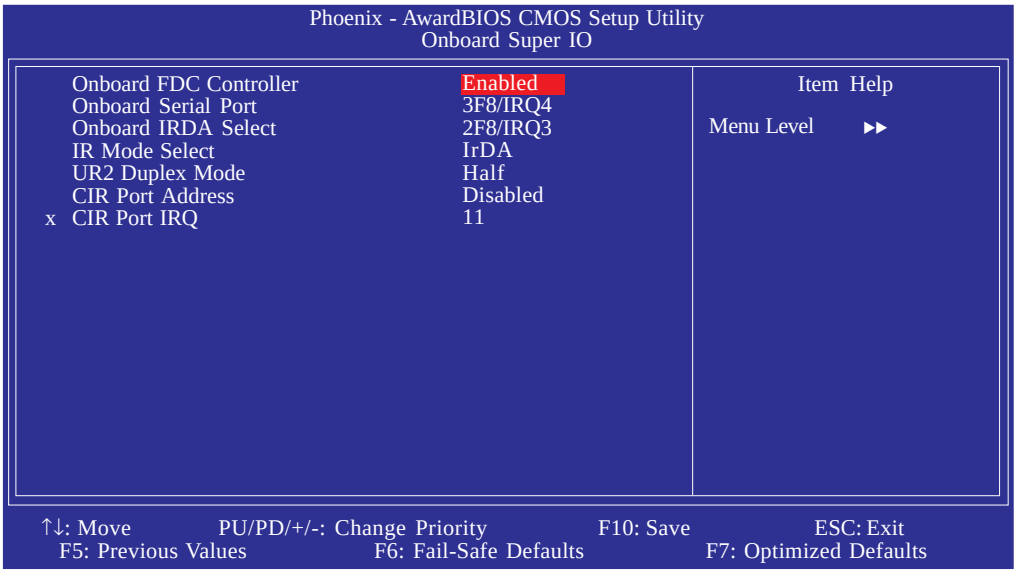
Combined Mode

This field is used to enable or disable the combined mode.

PATA Channel Mapping

The options are Primary and Secondary.

Onboard Super IO



The settings on the screen are for reference only. Your version may not be identical to this one.

Onboard FDC Controller

Enabled Enables the onboard floppy disk controller.
Disabled Disables the onboard floppy disk controller.

Onboard Serial Port

3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3 Allows you to manually select an I/O address for the onboard serial port.
Disabled Disables the onboard serial port.

Onboard IrDA Select

3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3 Allows you to manually select an I/O address for the onboard IrDA.
Disabled Disables the onboard IrDA.

IR Mode Select

This field is used to select the type of IrDA standard supported by your IrDA device. For better transmission of data, your IrDA peripheral device must be within a 30o angle and within a distance of 1 meter. The options are Normal, IrDA, ASKIR and SCR.

UR2 Duplex Mode

Half	Data is completely transmitted before receiving data.
Full	Transmits and receives data simultaneously.

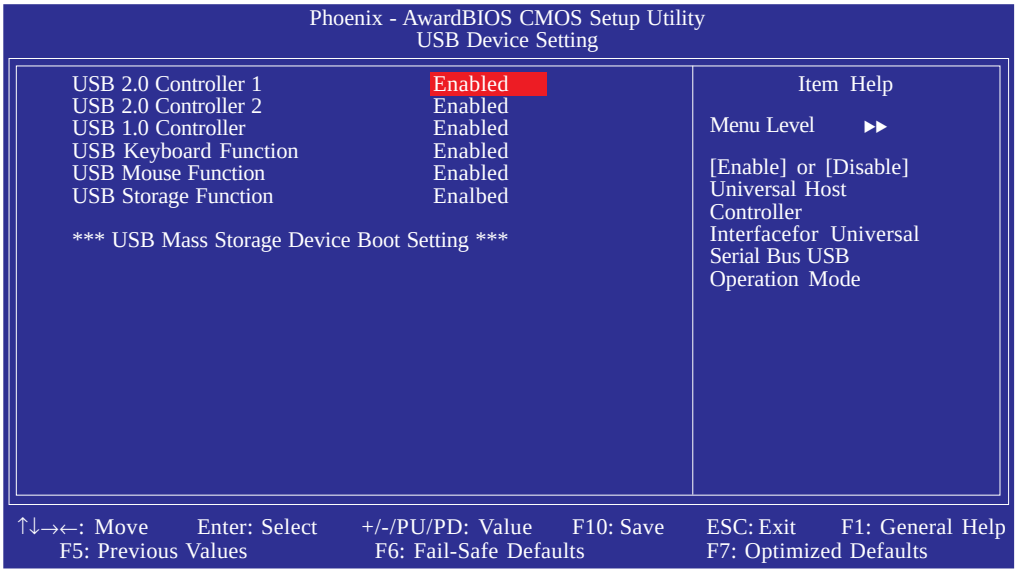
CIR Port Address

This field is used to select an I/O address for the CIR device.

CIR Port IRQ

This field is used to select an IRQ for the CIR device.

USB Device Setting


Phoenix - AwardBIOS CMOS Setup Utility
USB Device Setting
USB 2.0 Controller 1 Enabled
USB 2.0 Controller 2 Enabled
USB 1.0 Controller Enabled
USB Keyboard Function Enabled
USB Mouse Function Enabled
USB Storage Function Enalbed
*** USB Mass Storage Device Boot Setting ***
Item Help
Menu Level ▸▸
[Enable] or [Disable] Universal Host Controller Interfacefor Universal Serial Bus USB Operation Mode
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

USB 2.0 Controller 1 / USB 2.0 Controller 2

This field is used to enable or disable the Enhanced Host Controller Interface (USB 2.0).

USB 1.0 Controller

This field is used to enable or disable the Universal Host Controller Interface (USB 1.0).

USB Keyboard Function

Due to the limited space of the BIOS ROM, the support for legacy USB keyboard (in DOS mode) is by default set to Disabled. With more BIOS ROM space available, it will be able to support more advanced features as well as provide compatibility to a wide variety of peripheral devices.

If a PS/2 keyboard is not available and you need to use a USB keyboard to install Windows (installation is performed in DOS mode) or run any program under DOS, set this field to Enabled.

USB Mouse Function

Due to the limited space of the BIOS ROM, the support for legacy USB mouse (in DOS mode) is by default set to Disabled. With more BIOS ROM space available, it will be able to support more advanced features as well as provide compatibility to a wide variety of peripheral devices.

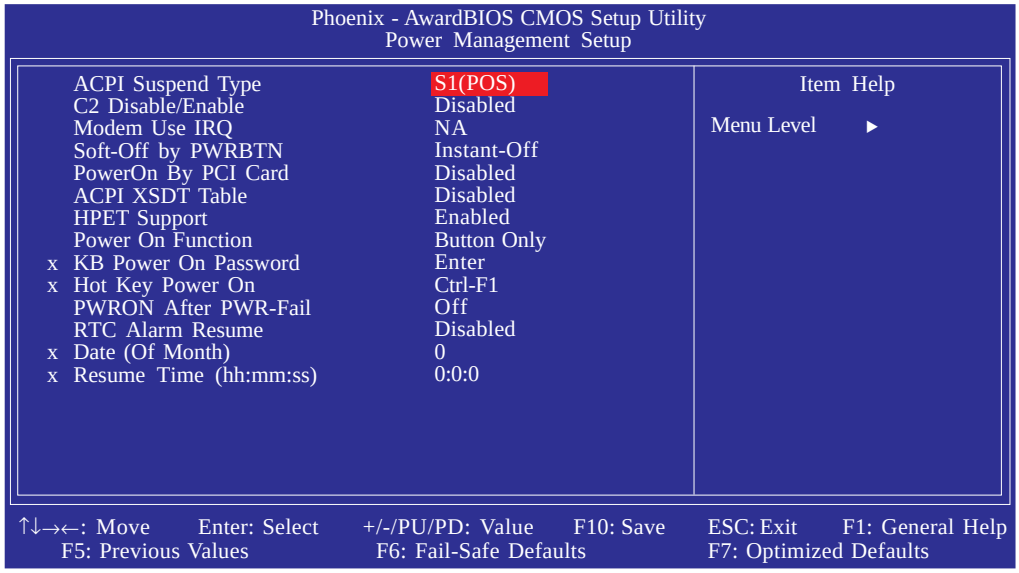
If a PS/2 mouse is not available and you need to use a USB mouse to install Windows (installation is performed in DOS mode) or run any program under DOS, set this field to Enabled.

USB Storage Function

This field is used to enable or disable the support for legacy USB mass storage.

Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy.


Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
ACPI Suspend Type S1(POS)
C2 Disable/Enable Disabled
Modem Use IRQ NA
Soft-Off by PWRBTN Instant-Off
PowerOn By PCI Card Disabled
ACPI XSDT Table Disabled
HPET Support Enabled
Power On Function Button Only
x KB Power On Password Enter
x Hot Key Power On Ctrl-F1
PWRON After PWR-Fail Off
RTC Alarm Resume Disabled
x Date (Of Month) 0
x Resume Time (hh:mm:ss) 0:0:0
Item Help
Menu Level ▶
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The settings on the screen are for reference only. Your version may not be identical to this one.

ACPI Suspend Type

This field is used to select the type of Suspend mode.

S1(POS) Enables the Power On Suspend function.
S3(STR) Enables the Suspend to RAM function.

C2 Disable/Enable

The options are Enabled and Disabled.

MODEM Use IRQ

This field is used to select an IRQ channel for the modem installed in your system.

Soft-Off by PWRBTN

This field allows you to select the method of powering off your system.

Delay 4 Sec. Regardless of whether the Power Management function is enabled or disabled, if the power button is pushed and released in less than 4 sec, the system enters the Suspend mode. The purpose of this function is to prevent the system from powering off in case you accidentally "hit" or pushed the power button. Push and release again in less than 4 sec to restore. Pushing the power button for more than 4 seconds will power off the system.

Instant-Off Pressing and then releasing the power button at once will immediately power off your system.

PowerOn By PCI Card

Enabled This field should be set to Enabled only if your PCI card such as LAN card or modem card uses the PCI PME (Power Management Event) signal to remotely wake up the system. Access to the LAN card or PCI card will cause the system to wake up. Refer to the card's documentation for more information.

Disabled The system will not wake up despite access to the PCI card.

ACPI XSDT Table

The options are Enabled and Disabled.

HPET Support

The options are Enabled and Disabled.

Power On Function

This field allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system.

Button only	Default setting. Uses the power button to power on the system.
Password	When this option is selected, set the password you would like to use to power-on the system in the "KB Power On Password" field.
Hot Key	When this option is selected, select the function key you would like to use to power-on the system in the "Hot Key Power On" field.
MS Move&Click	When this option is selected, move or click the mouse to power-on the system.
Any Key	Press any key to power-on the system.
Keyboard 98	When this option is selected, press the "wake up" key of the Windows® 98 compatible keyboard to power-on the system.

KB Power On Password

Move the cursor to this field and press <Enter>. Enter your password. You can enter up to 5 characters. Type in exactly the same password to confirm, then press <Enter>.

The power button will not function once a keyboard password has been set in this field. You must type the correct password to power-on the system. If you forgot the password, power-off the system and remove the battery. Wait for a few seconds and install it back before powering-on the system.

Hot Key Power On

This field is used to select a function key that you would like to use to power-on the system.

PWRON After PWR-Fail

Off	When power returns after an AC power failure, the system's power is off. You must press the Power button to power-on the system.
On	When power returns after an AC power failure, the system will automatically power-on.

RTC Alarm Resume

Enabled	When Enabled, you can set the date and time you would like the Soft Power Down (Soft-Off) PC to power-on in the "Date (of Month)" and "Resume Time" fields. However, if the system is being accessed by incoming calls or the network (Resume On Ring/LAN) prior to the date and time set in these fields, the system will give priority to the incoming calls or network.
Disabled	Disables the automatic power-on function. (default).

Date (of Month)

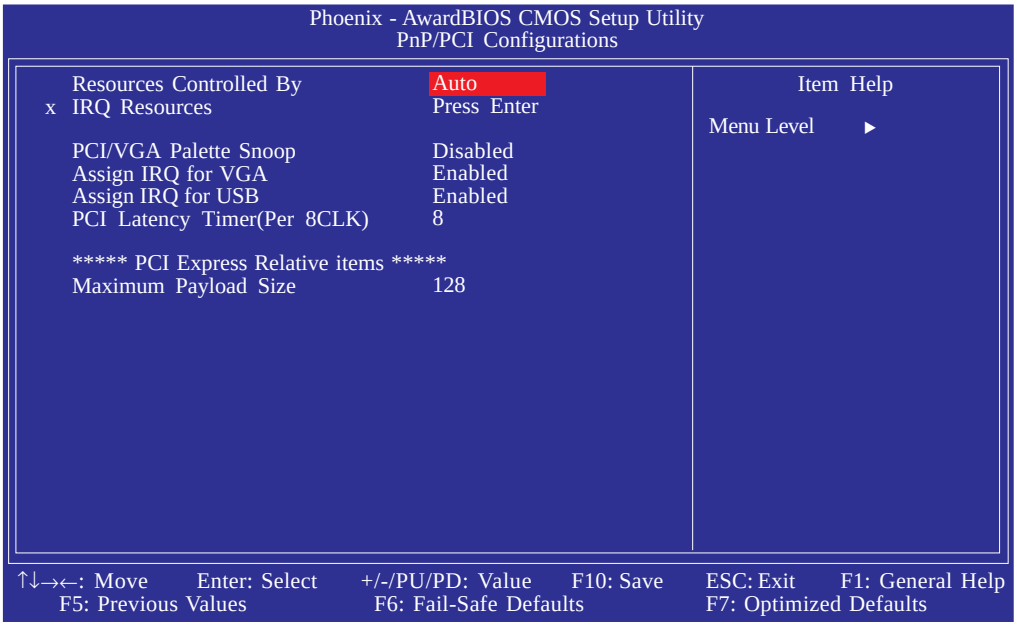
0	The system will power-on everyday according to the time set in the "Time (hh:mm:ss) Alarm" field.
1-31	Select a date you would like the system to power-on. The system will power-on on the set date, and time set in the "Time (hh:mm:ss) Alarm" field.

Resume Time (hh:mm:ss)

This is used to set the time you would like the system to power-on. If you want the system to power-on everyday as set in the "Date (of Month) " field, the time set in this field must be later than the time of the RTC set in the Standard CMOS Features submenu.

PnP/PCI Configurations

This section describes configuring the PCI bus system. It covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.



The settings on the screen are for reference only. Your version may not be identical to this one.

Resources Controlled By

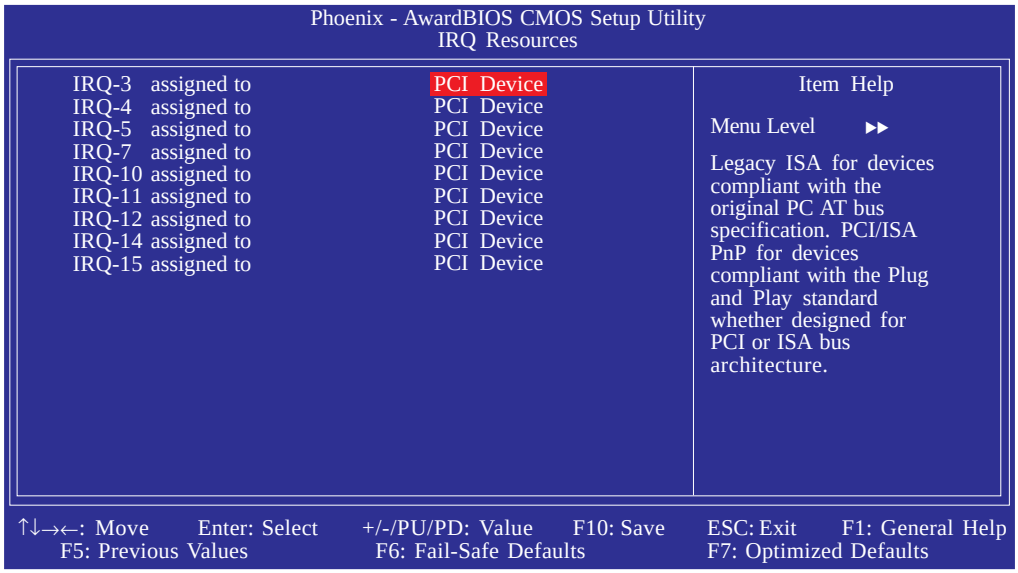
The Award Plug and Play BIOS has the capability to automatically configure all of the boot and Plug and Play compatible devices.

Auto(ESCD) The system will automatically detect the settings for you.

Manual Choose the specific IRQ in the "IRQ Resources" field.

IRQ Resources

Move the cursor to this field and press <Enter>. This field is used to set each system interrupt to either Reserved or PCI Device.



The settings on the screen are for reference only. Your version may not be identical to this one.

PCI/VGA Palette Snoop

This field determines whether the MPEG ISA/VESA VGA cards can work with PCI/VGA or not. The default value is Disabled.

Enabled MPEG ISA/VESA VGA cards work with PCI/VGA.
Disabled MPEG ISA/VESA VGA cards does not work with PCI/VGA.

Assign IRQ for VGA

When Enabled, the system automatically assigns an IRQ for the VGA card installed. Your VGA card will need an IRQ only when using the video capture function of the card. If you are not using this function and a new device requires an IRQ, you can set this field to Disabled. The IRQ (previously occupied by the VGA card) will be available for your new device.

Assign IRQ for USB

When Enabled, the system automatically assigns an IRQ for the USB device connected to your system. However, if you are not using USB devices and an ISA slot requires an IRQ, set this field to Disabled. The IRQ previously occupied by the USB device will be available for the ISA slot.

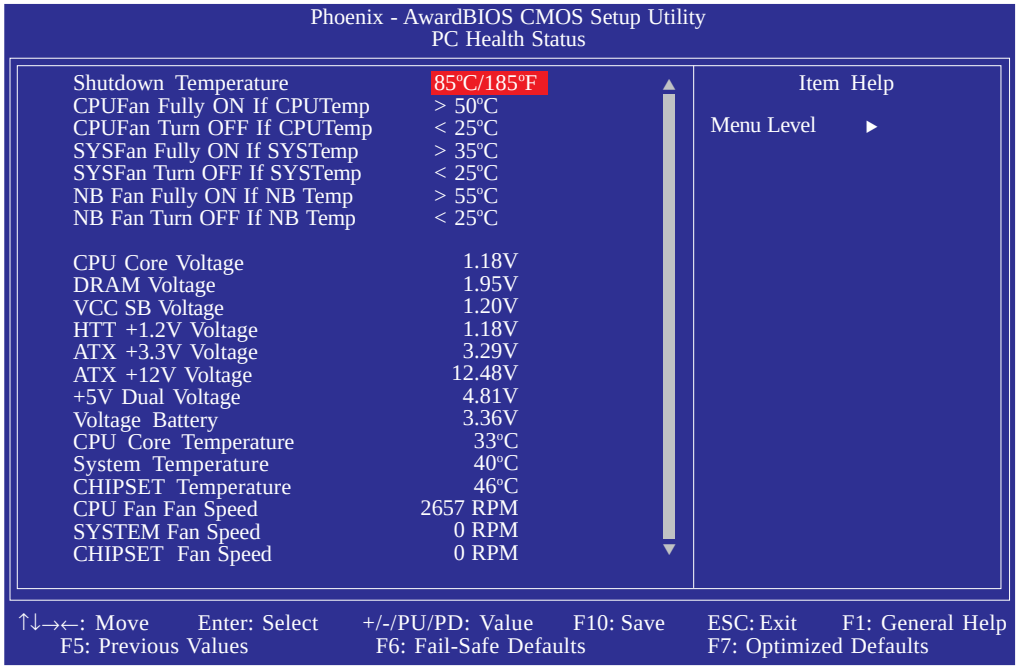
PCI Latency Timer (Per 8CLK)

This feature is used to select the length of time each PCI device will control the bus before another takes over. The larger the value, the longer the PCI device can retain control of the bus. Since each access to the bus comes with an initial delay before any transaction can be made, low values for the PCI Latency Timer will reduce the effectiveness of the PCI bandwidth while higher values will improve it.

Maximum Payload Size

This field is used to select the maximum TLP payload size of the PCI Express devices. The unit is byte.

PC Health Status


Phoenix - AwardBIOS CMOS Setup Utility
PC Health Status
Shutdown Temperature 85°C/185°F
CPUFan Fully ON If CPUTemp > 50°C
CPUFan Turn OFF If CPUTemp < 25°C
SYSFan Fully ON If SYSTemp > 35°C
SYSFan Turn OFF If SYSTemp < 25°C
NB Fan Fully ON If NB Temp > 55°C
NB Fan Turn OFF If NB Temp < 25°C
CPU Core Voltage 1.18V
DRAM Voltage 1.95V
VCC SB Voltage 1.20V
HTT +1.2V Voltage 1.18V
ATX +3.3V Voltage 3.29V
ATX +12V Voltage 12.48V
+5V Dual Voltage 4.81V
Voltage Battery 3.36V
CPU Core Temperature 33°C
System Temperature 40°C
CHIPSET Temperature 46°C
CPU Fan Fan Speed 2657 RPM
SYSTEM Fan Speed 0 RPM
CHIPSET Fan Speed 0 RPM
Item Help
Menu Level ▶
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The screen above list all the fields available in the PC Health Status submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

Shutdown Temperature

You can prevent the system from overheating by selecting a temperature at which the system will shutdown. If the system detected that its temperature exceeded the one set in this field, it will automatically shutdown.

CPUFan Fully On If CPUTemp

This field is used to select the CPU's temperature at which the CPU fan will rotate at full speed.

CPUFan Turn Off If CPUTemp

This field is used to select the CPU's temperature at which the CPU fan will rotate at a start speed which is the slowest speed.

Note:

1. If the CPU temperature runs between the highest (set in the "CPUFan Fully On If CPUTemp" field) and lowest (set in the "CPUFan Turn Off If CPUTemp" field) temperature, the system will automatically adjust the CPU fan's speed according to the temperature.

2. If you want to reduce the CPU fan's noise or prevent CPU overheat, select a lower temperature in the "CPUFan Fully On If CPUTemp" field to allow the CPU fan to rotate full speed at the selected lower temperature.

SYSFan Fully On If SYSTemp

This field is used to select the system's temperature at which the chassis fan will rotate at full speed.

SYSFan Turn Off If SYSTemp

This field is used to select the system's temperature at which the chassis fan will rotate at a start speed which is the slowest speed.

Note:
If the system's temperature runs between the highest (set in the "SYSFan Fully On If SYSTemp" field) and lowest (set in the "SYSFan Turn Off If SYSTemp" field) temperature, the system will automatically adjust the chassis fan's speed according to the temperature.

NB Fan Fully On If NB Temp

This field is used to select the Northbridge chip's temperature at which the chip's fan will rotate at full speed.

NB Fan Turn Off If NB Temp

This field is used to select the Northbridge chip's temperature at which the chip's fan will rotate at a start speed which is the slowest speed.

Note:
If the Northbridge chip's temperature runs between the highest (set in the "NB Fan Fully On If NB Temp" field) and lowest (set in the "NB Fan Turn Off If NB Temp" field) temperature, the system will automatically adjust the fan speed of the Northbridge chip according to the temperature.

CPU Core Voltage to CHIPSET Fan Speed

These fields will show the output voltage, temperature and fan speed of the monitored devices or components.

Genie BIOS Setting

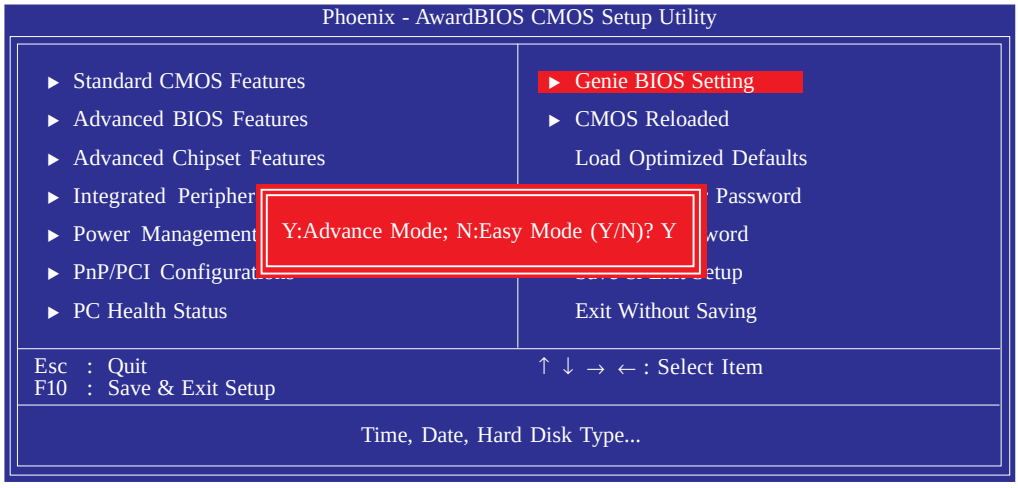
Aimed to provide convenience and superb overclockability, this submenu comes available in Easy mode (default mode) and Advance mode.

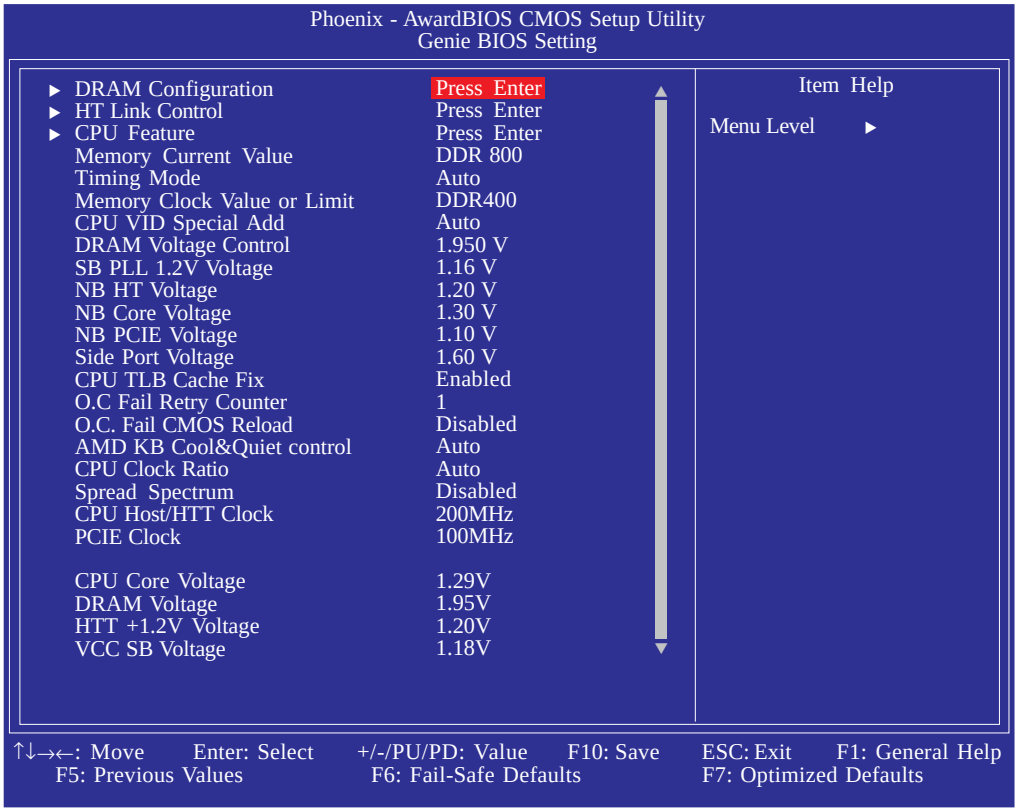
Easy Mode

Easy mode displays fields commonly used by users.

Advance Mode

If you intend to tweak your PC or boost its overclock features, you can switch the Genie BIOS Setting submenu from Easy mode to Advance mode by simply pressing <F9> in the main menu of the Award BIOS utility then pressing <Y> to select Advance Mode. The Advance mode will display a wide range of fields useful in overclocking the board.




Phoenix - AwardBIOS CMOS Setup Utility
Genie BIOS Setting
▶ DRAM Configuration Press Enter
▶ HT Link Control Press Enter
▶ CPU Feature Press Enter
Memory Current Value DDR 800
Timing Mode Auto
Memory Clock Value or Limit DDR400
CPU VID Special Add Auto
DRAM Voltage Control 1.950 V
SB PLL 1.2V Voltage 1.16 V
NB HT Voltage 1.20 V
NB Core Voltage 1.30 V
NB PCIE Voltage 1.10 V
Side Port Voltage 1.60 V
CPU TLB Cache Fix Enabled
O.C Fail Retry Counter 1
O.C. Fail CMOS Reload Disabled
AMD KB Cool&Quiet control Auto
CPU Clock Ratio Auto
Spread Spectrum Disabled
CPU Host/HTT Clock 200MHz
PCIE Clock 100MHz
CPU Core Voltage 1.29V
DRAM Voltage 1.95V
HTT +1.2V Voltage 1.20V
VCC SB Voltage 1.18V
Item Help
Menu Level ▶
↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The screen above list all the fields available in the Genie BIOS Setting submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

DRAM Configuration

HT Link Control

CPU Feature

Refer to the following pages for more information on these submenus.

Memory Current Value

This field will show the current value of the system memory.

Timing Mode

Auto	The BIOS will automatically detect all DRAM timing.
MaxMemClk	This option uses the maximum DRAM clock.
Manual	This option allows you to manually select the DRAM's clock speed.

Memory Clock Value or Limit

This is used to select the clock speed of the DIMM.

CPU VID Special Add

This is used to select the voltage supplied to the CPU.

DRAM Voltage Control

This is used to select the voltage supplied to the DRAM.

SB PLL 1.2V Voltage

This field allows you to manually select the Southbridge's core voltage.

NB HT Voltage

This is used to select the Northbridge's HyperTransport voltage.

NB Core Voltage

This is used to select the Northbridge's core voltage.

NB PCIE Voltage

The options are 1.10V to 1.40V.

Side Port Voltage

This is used to select the SidePort's voltage.

CPU TLB Cache Fix

When this field is Enabled, it will fix the TLB cache issue for Phenom B2 CPU.

O.C. Fail Retry Counter

The options are 0, 1, 2 and 3.

O.C. Fail CMOS Reload

The options are Disabled, Bank 1, Bank 2, Bank 3 and Bank 4.

AMD K8 Cool&Quiet Control

Auto	Enables AMD's Cool'n'Quiet technology. This function allows the system to detect the CPU's tasks and utilization status. When the CPU's task slows down, the system effectively lowers power consumption by changing its CPU speed and voltage, subsequently decreasing its noise level.
Disabled	Disables AMD's Cool'n'Quiet technology.

CPU Clock Ratio

This field is used to select the CPU's frequency ratio.

Spread Spectrum

Leave this field in its default setting. Do not alter this setting unless advised by an engineer or technician.

CPU Host/HTT Clock

This field is used to enter a CPU Host/HTT Clock value. The minimum is 200 and the maximum is 700.

PCIE Clock

This field is used to enter the PCIE clock. The minimum is 100 and the maximum is 250.

CPU Core Voltage

This field will show the CPU's current voltage.

DRAM Voltage

This field will show the DRAM's current voltage.

HTT +1.2V Voltage

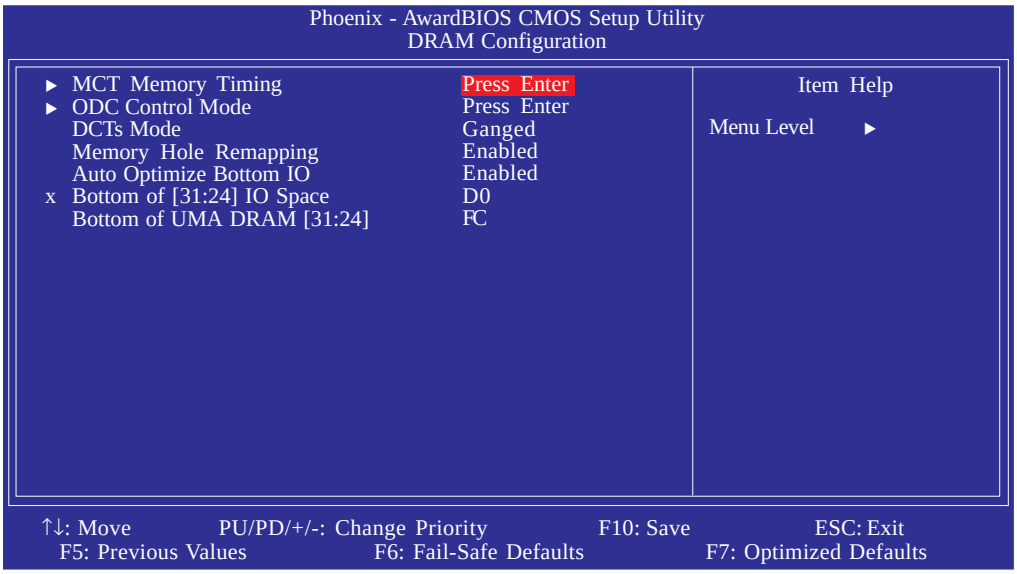
This field will show the HTT's current voltage.

VCC SB Voltage

This field will show the Southbridge's current voltage.

DRAM Configuration

Move the cursor to this field and press <Enter>, the following screen will appear:



The settings on the screen are for reference only. Your version may not be identical to this one.

MCT Memory Timing

ODC Control Mode

Refer to the following pages for more information on these submenus.

DCTs Mode

The options are Ganged and Unganged.

Memory Hole Remapping

The options are Enabled and Disabled.

Auto Optimize Bottom IO

The options are Enabled and Disabled.

Bottom of [31:24] IO Space

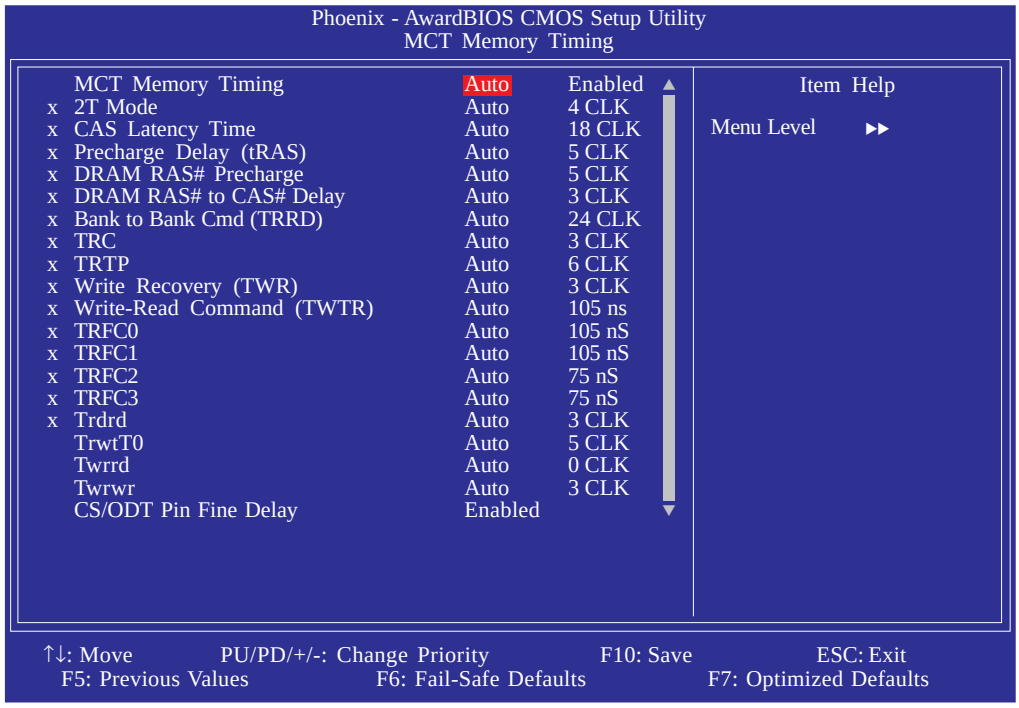
This field is used to enter the memory that will be remapped to another address. The minimum is 0000 and the maximum is 00FF.

Bottom of UMA DRAM [31:24]

This field is used to enter the UMA DRAM value. The minimum is 0000 and the maximum is 00FC.

MCT Memory Timing

Move the cursor to this field and press <Enter>, the following screen will appear:


Phoenix - AwardBIOS CMOS Setup Utility
MCT Memory Timing
MCT Memory Timing Auto Enabled
x 2T Mode Auto 4 CLK
x CAS Latency Time Auto 18 CLK
x Precharge Delay (tRAS) Auto 5 CLK
x DRAM RAS# Precharge Auto 5 CLK
x DRAM RAS# to CAS# Delay Auto 3 CLK
x Bank to Bank Cmd (TRRD) Auto 24 CLK
x TRC Auto 3 CLK
x TRTP Auto 6 CLK
x Write Recovery (TWR) Auto 3 CLK
x Write-Read Command (TWTR) Auto 105 ns
x TRFC0 Auto 105 nS
x TRFC1 Auto 105 nS
x TRFC2 Auto 75 nS
x TRFC3 Auto 75 nS
x Trdrd Auto 3 CLK
TrwtT0 Auto 5 CLK
Twrrd Auto 0 CLK
Twrwr Auto 3 CLK
CS/ODT Pin Fine Delay Enabled
Item Help
Menu Level ▸▸
↑↓: Move PU/PD/+/-: Change Priority F10: Save ESC: Exit
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

The screen above list all the fields available in the MCT Memory Timing submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

MCT Memory Timing

Auto The BIOS will automatically detect all the MCT memory timing.

Manual This option allows you to manually configure the MCT memory timing on the following fields.

2T Mode

This field is used to configure the 2T mode.

CAS Latency Time

This field is used to select the clock cycles for the CAS latency.

Precharge Delay (tRAS)

The options are Auto, 5 CLK to 18 CLK.

DRAM RAS# Precharge

This field is used to select the idle clocks after issuing a precharge command to the DRAM.

DRAM RAS# to CAS# Delay

This field is used to select the latency between the DRAM active command and the read/write command. The options are 2 and 3.

Bank to Bank Cmd (TRRD)

The options are Auto, 2 CLK to 5 CLK.

TRC

Row-Cycle delay. Set the "System Performance" field to Optimal if you want to use the delay time recommended by the DIMM manufacturer.

TRTP

The options are Auto, 2CLK - 4CLK and 3CLK - 5CLK.

Write Recovery (TWR)

This field is used to select the write recovery time when the DRAM safely registers the last write data. This is the time from the last write data to precharge.

Write-Read Command (TWTR)

The options are Auto, 1 CLK, 2 CLK and 3 CLK.

TRFC 0 to TRFC 3

These fields are used to select the auto refresh cycle time.

Trdrd

The options are Auto, 2 CLK, 3 CLK, 4 CLK and 5 CLK.

TrwtT0

The options are Auto, 3 CLK to 9 CLK.

Twrrd

The options are Auto, 0 CLK, 1 CLK, 2 CLK and 3 CLK.

Twrwr

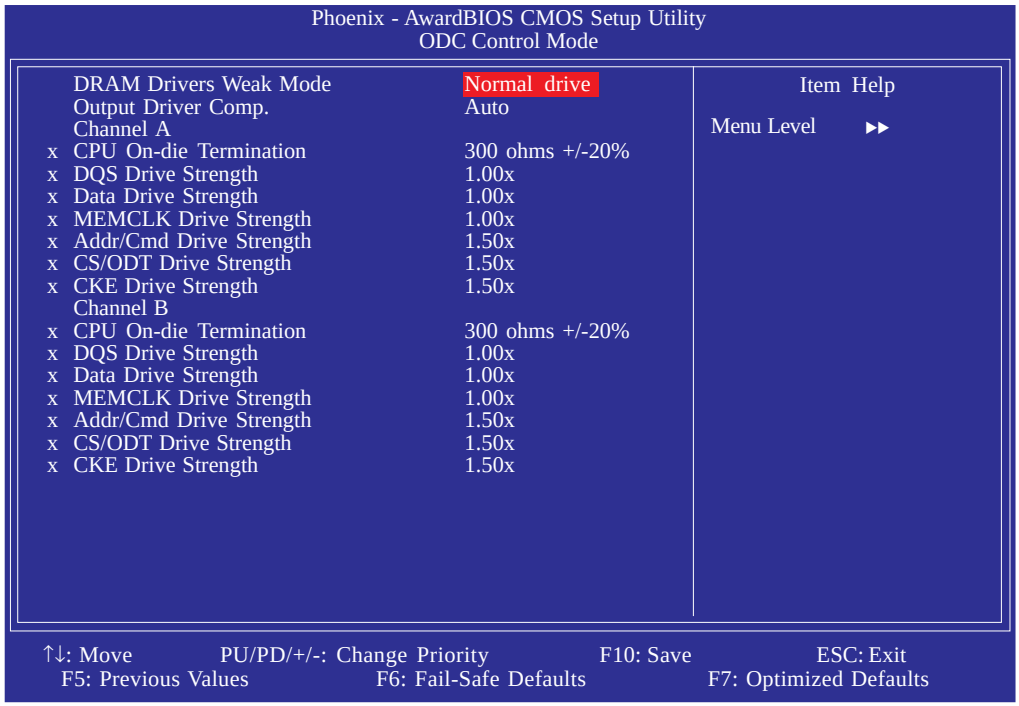
The options are Auto, 1 CLK, 2 CLK and 3 CLK.

CS/ODT Pin Fine Delay

The options are Enabled and Disabled.

ODC Control Mode

Move the cursor to this field and press <Enter>, the following screen will appear:



The settings on the screen are for reference only. Your version may not be identical to this one.

DRAM Drivers Weak Mode

The options are Normal drive and Weak drive.

Output Driver Comp.

The options are Auto and Manual.

CPU On-die Termination

The options are 300 ohms +/-20%, 150 ohms +/-20% and 75 ohms +/-20%.

DQS Drive Strength

The options are 0.75x, 1.00x, 1.25x and 1.50x.

Data Drive Strength

The options are 0.75x, 1.00x, 1.25x and 1.50x.

MEMCLK Drive Strength

The options are 0.75x, 1.00x, 1.25x and 1.50x.

Addr/Cmd Drive Strength

The options are 1.00x, 1.25x, 1.50x and 2.00x.

CS/ODT Drive Strength

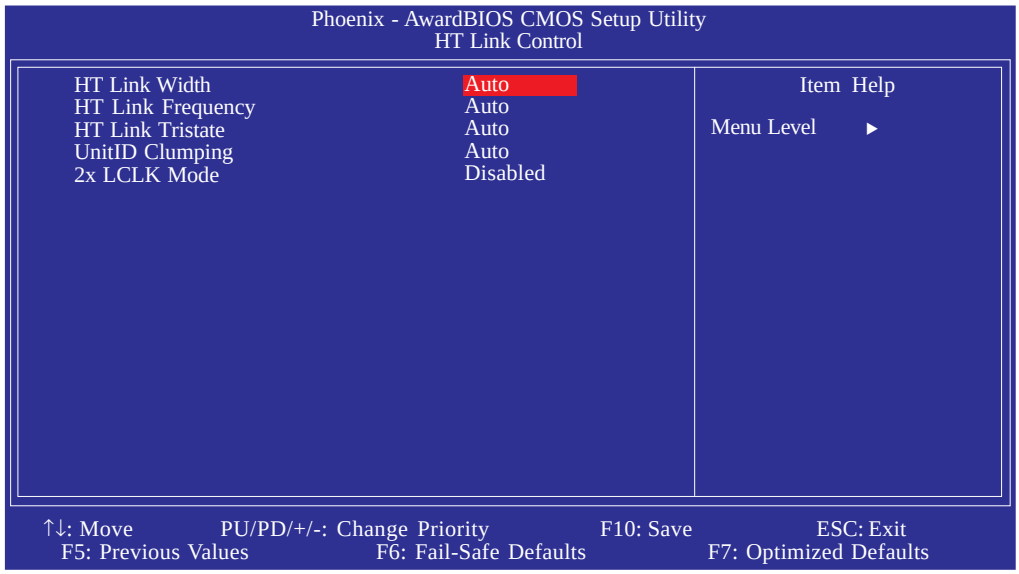
The options are 1.00x, 1.25x, 1.50x and 2.00x.

CKE Drive Strength

The options are 1.00x, 1.25x, 1.50x and 2.00x.

HT Link Control

Move the cursor to this field and press <Enter>, the following screen will appear:



The settings on the screen are for reference only. Your version may not be identical to this one.

HT Link Width

The options are Auto, 8 bit and 16 bit.

HT Link Frequency

This field is used to select the HyperTransport link's frequency.

HT Link Tristate

The options are Auto, Disabled, CAD/CTL and CAD/CTL/CLK.

UnitID Clumping

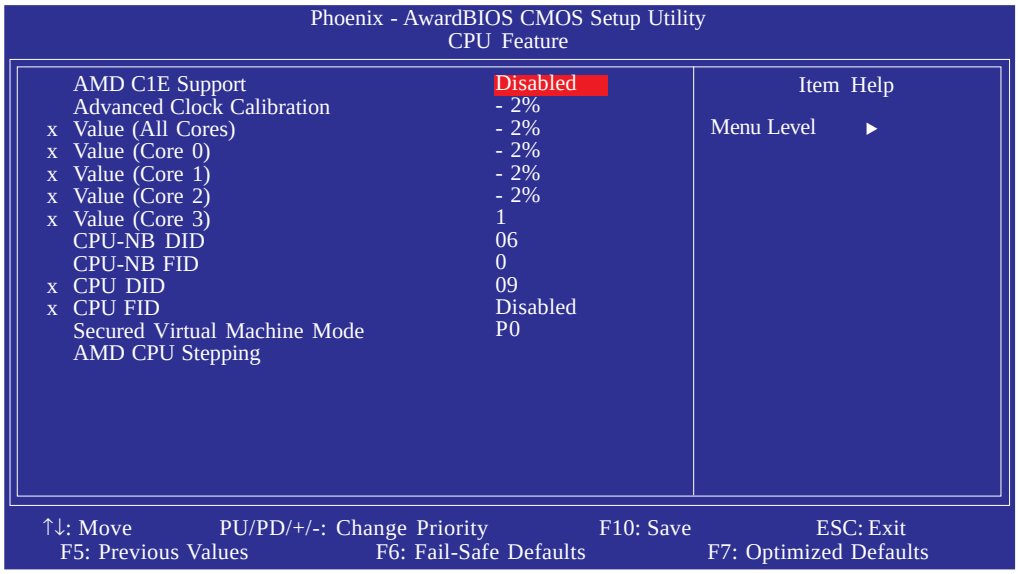
The options are Auto, Disabled, PCIE, GFX and PCIE & GFX.

2x LCLK Mode

The options are Enabled and Disabled.

CPU Feature

Move the cursor to this field and press <Enter>, the following screen will appear:



The settings on the screen are for reference only. Your version may not be identical to this one.

AMD C1E Support

The options are Disabled and SoftWare SMI.

Advanced Clock Calibration

This field is used to configure the advanced clock calibration. The options are Disabled, Auto, All Cores and Per Core.

Value (All Cores) to Value (Core 3)

These fields are used to select the core value. The options are 0x to -12x

CPU-NB DID

This field is used to select the CPU-NB DID.

CPU-NB FID

This field is used to select the CPU-NB FID.

CPU DID

This field is used to select the CPU DID.

CPU FID

This field is used to select the CPU FID.

Secure Virtual Machine Mode

The options are Enabled and Disabled.

AMD CPU Stepping

The options are P0 and P1.

CMOS Reloaded

The CMOS Reloaded submenu allows you to save different configurations and when needed, allows you to conveniently restore one of these previously saved configurations. Highlight CMOS Reloaded in the main menu then press <Enter>.

The screen above list all the fields available in the CMOS Reloaded submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

CMOS Reloaded is especially helpful to overclockers who often go through the tiresome trial and error process of repeatedly changing the BIOS settings to come up with the most ideal overclocked setting. By being able to save and load the settings, it eliminates the tedious job of remembering several settings and/or repeatedly resetting settings during the trial process. The settings are stored in the SEEPROM. SEEPROM is divided into 5 banks - the backup bank and the 4 user defined banks.

Auto Save Bootable Setting

This field is used to automatically save the last bootable setting from CMOS to an area in the SEEPROM referred to as the backup bank. To use this function:

1. Set this field to Enabled.
2. Select "Save & Exit Setup" in the main menu then press <Enter>.
3. Type <Y> then press <Enter>.

If the changes to the setting allowed the system to boot, the setting will be stored in the SEEPROM. In other words, if the system did not boot up, the setting will not be stored. You may then follow the steps in the next section to load the last bootable setting.

Load Last Bootable Setting

If, during the trial and error process, the setting resulted to the system's instability or worse yet, not being able to boot up the system, please follow the steps below to use the Load function.

Note:
You can use the Load function only if you have set the "Auto Save Bootable Setting" to Enabled.

1. If the system did not boot up properly but you were able to enter the BIOS utility:
   a. Select "CMOS Reloaded" in the main menu then press <Enter>.
   b. Move the cursor to "Load Last Bootable Setting" then press "Load".
   c. Press <Y> to load the last bootable setting that was stored in the backup bank.
2. If you cannot enter the BIOS utility:
   a. Use the Clear CMOS jumper to clear the CMOS. Refer to chapter 2 for more information about clearing CMOS.
   b. Enter the BIOS utility then perform steps 1a to 1c.

Saving, Loading and Naming BIOS Settings

For overclockers who require different sets of settings for various system environments or operating systems, CMOS Reloaded allows you to save, load and name up to four sets of BIOS settings - in the "User Defined Setting Bank #1" to "User Defined Setting Bank #4" fields.

Save Setting to Bank With

This field is used to select the type of setting you would like saved to a User Defined Setting Bank when you use the "Save to this Bank" function of that bank.

Current BIOS Setting	This option will save the current BIOS setting to the User Defined Setting Bank.
Last BIOS Setting	This option will save the last saved BIOS setting to the User Defined Setting Bank.

User Defined Setting Bank #1/2/3/4

Bank Description
To name the BIOS setting, move the cursor to "Bank Description" then press <Enter>. You can enter up to 60 characters. Providing a name to the BIOS setting will allow you to easily remember the settings in the bank.

Save to this Bank
To save the BIOS setting, move the cursor to "Save to this Bank" then press <Enter>. Type <Y> then press <Enter>. This will save the current setting or the last saved setting to this bank; depending on the option selected in the "Save Setting to Bank With" field.

If you want to immediately reboot to use the new settings, make sure to save before you exit the BIOS setup utility by selecting "Y" in the "Save & Exit Setup" submenu.

Load from this Bank

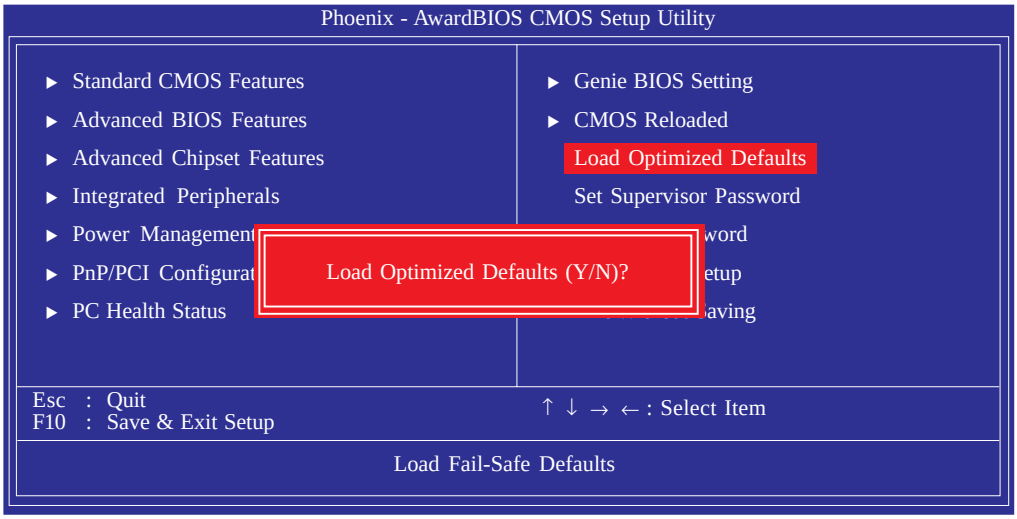
To load the setting saved in the bank, move the cursor to "Load from this Bank" then press <Enter>. The setting in this bank will replace the current setting. Make sure to save before you exit the BIOS setup utility by selecting "Y" in the "Save & Exit Setup" submenu.

Hotkey

You can now load a BIOS setting during system boot up; bypassing the lengthy process of entering the BIOS utility to load a setting. Move the cursor to "Hotkey" then press <Enter>. Select the key you would like to use to load the settings from the bank. When the system boots up, press the key to load the setting.

Load Optimized Defaults

The "Load Optimized Defaults" option loads optimized settings from the BIOS ROM. Use the default values as standard values for your system. Highlight this option in the main menu and press <Enter>.

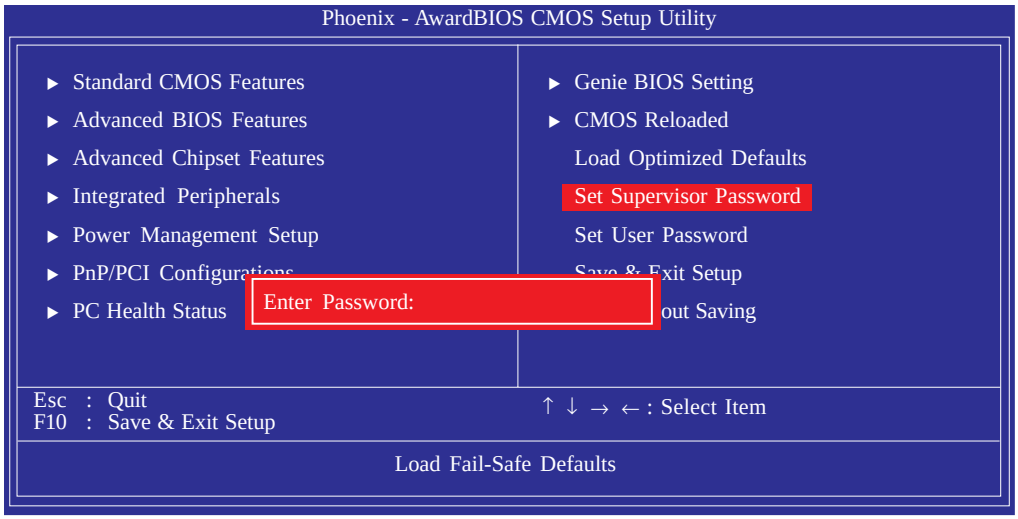


Type <Y> and press <Enter> to load the Setup default values.

Set Supervisor Password

If you want to protect your system and setup from unauthorized entry, set a supervisor's password with the "System" option selected in the Advanced BIOS Features. If you want to protect access to setup only, but not your system, set a supervisor's password with the "Setup" option selected in the Advanced BIOS Features. You will not be prompted for a password when you cold boot the system.

Use the arrow keys to highlight "Set Supervisor Password" and press <Enter>.



Type in the password. You are limited to eight characters. When done, the message below will appear:

Confirm Password:

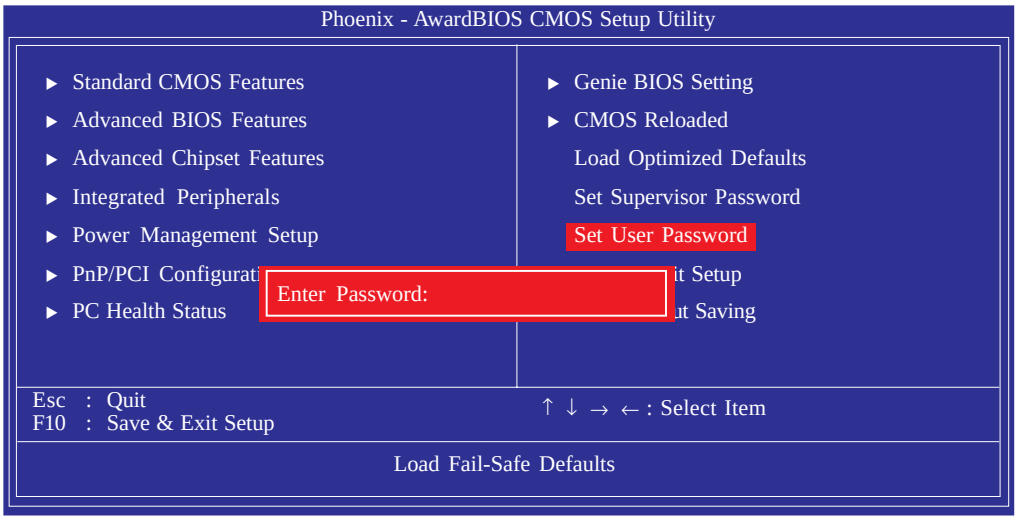
You are asked to verify the password. Type in exactly the same password. If you type in a wrong password, you will be prompted to enter the correct password again. To delete or disable the password function, highlight "Set Supervisor Password" and press <Enter>, instead of typing in a new password. Press the <Esc> key to return to the main menu.

Set User Password

If you want another user to have access only to your system but not to setup, set a user's password with the "System" option selected in the Advanced BIOS Features. If you want a user to enter a password when trying to access setup, set a user's password with the "Setup" option selected in the Advanced BIOS Features.

Using user's password to enter Setup allows a user to access only "Set User Password" that appears in the main menu screen. Access to all other options is denied.

Use the arrow keys to highlight "Set User Password" and press <Enter>.



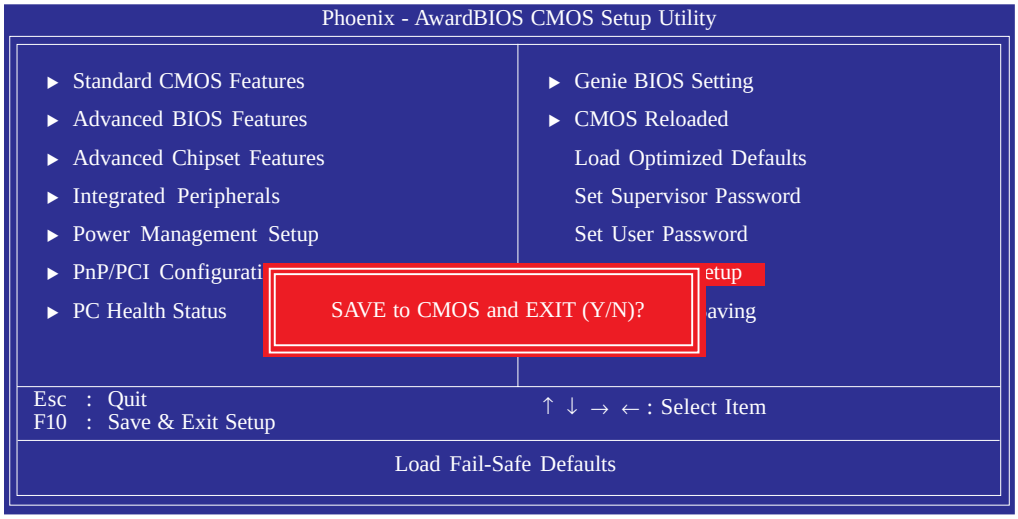
Type in the password. You are limited to eight characters. When done, the message below will appear:

Confirm Password:

You are asked to verify the password. Type in exactly the same password. If you type in a wrong password, you will be prompted to enter the correct password again. To delete or disable the password function, highlight "Set User Password" and press <Enter>, instead of typing in a new password. Press the <Esc> key to return to the main menu.

Save & Exit Setup

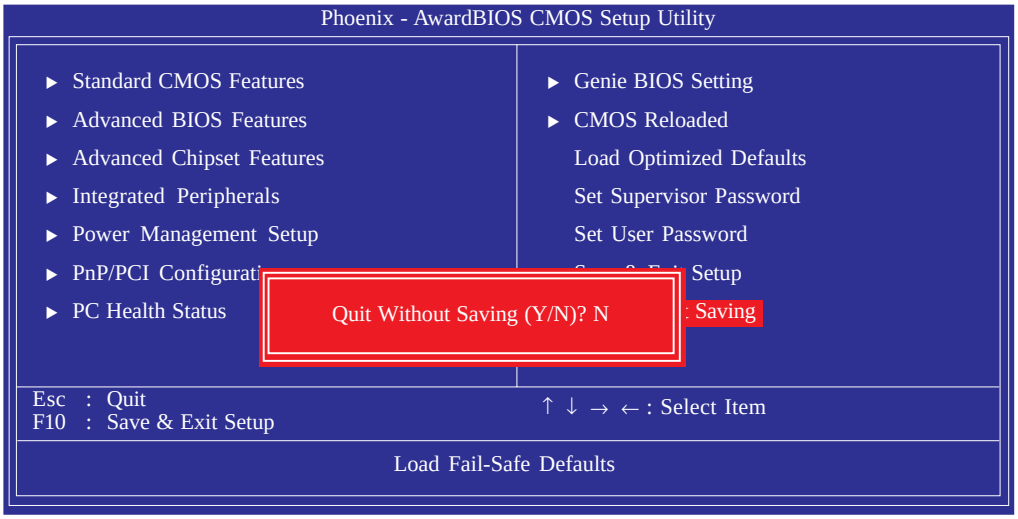
When all the changes have been made, highlight "Save & Exit Setup" and press <Enter>.



Type "Y" and press <Enter>. The modifications you have made will be written into the CMOS memory, and the system will reboot. You will once again see the initial diagnostics on the screen. If you wish to make additional changes to the setup, press <Ctrl> <Alt> <Esc> simultaneously or <Del> after memory testing is done.

Exit Without Saving

When you do not want to save the changes you have made, highlight "Exit Without Saving" and press <Enter>.



Type "Y" and press <Enter>. The system will reboot and you will once again see the initial diagnostics on the screen. If you wish to make any changes to the setup, press <Ctrl> <Alt> <Esc> simultaneously or <Del> after memory testing is done.

RAID BIOS

The AMD BIOS utility is used to configure and manage RAID on Serial ATA drives.

After you power up the system and all drives have been detected, the AMD BIOS status message screen will appear. Press the <F4> key to enter the utility. The utility allows you to build a RAID system on Serial ATA drives.

Important:
Before creating RAID, make sure you have installed the Serial ATA drives and connected the data cables otherwise you won't be able to enter the RAID BIOS utility.

Refer to chapter 5 for steps in configuring RAID.

Updating the BIOS

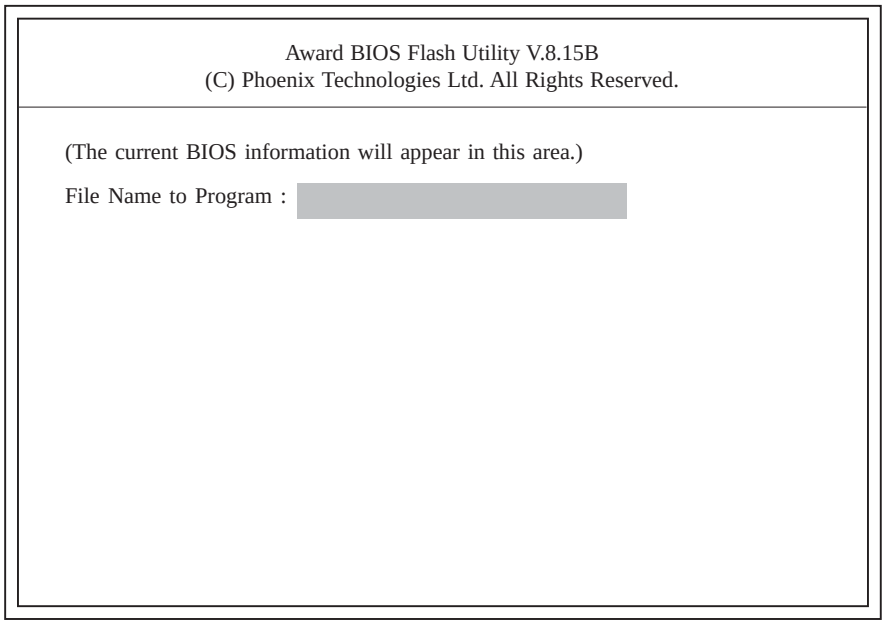
To update the BIOS, you will need the new BIOS file and a flash utility, AWDFLASH.EXE. You can download them from DFI's web site or contact technical support or your sales representative.

1. Save the new BIOS file along with the flash utility AWDFLASH.EXE to a floppy disk.

2. Reboot the system and enter the Award BIOS Setup Utility to set the first boot drive to "Floppy".

3. Save the setting and reboot the system.

4. After the system booted from the floppy disk, execute the flash utility by typing AWDFLASH.EXE. The following screen will appear.


Award BIOS Flash Utility V.8.15B
(C) Phoenix Technologies Ltd. All Rights Reserved.
(The current BIOS information will appear in this area.)
File Name to Program :

5. Type the new BIOS file name onto the gray area that is next to "File Name to Program" then press <Enter>.

6. The following will appear:

   Do You Want to Save BIOS (Y/N)

   This question refers to the current existing BIOS in your system. We recommend that you save the current BIOS and its flash utility; just in case you need to reinstall the BIOS. To save the current BIOS, press <Y> then enter the file name of the current BIOS. Otherwise, press <N>.

7. The following will then appear:

   Press "Y" to Program or "N" to Exit

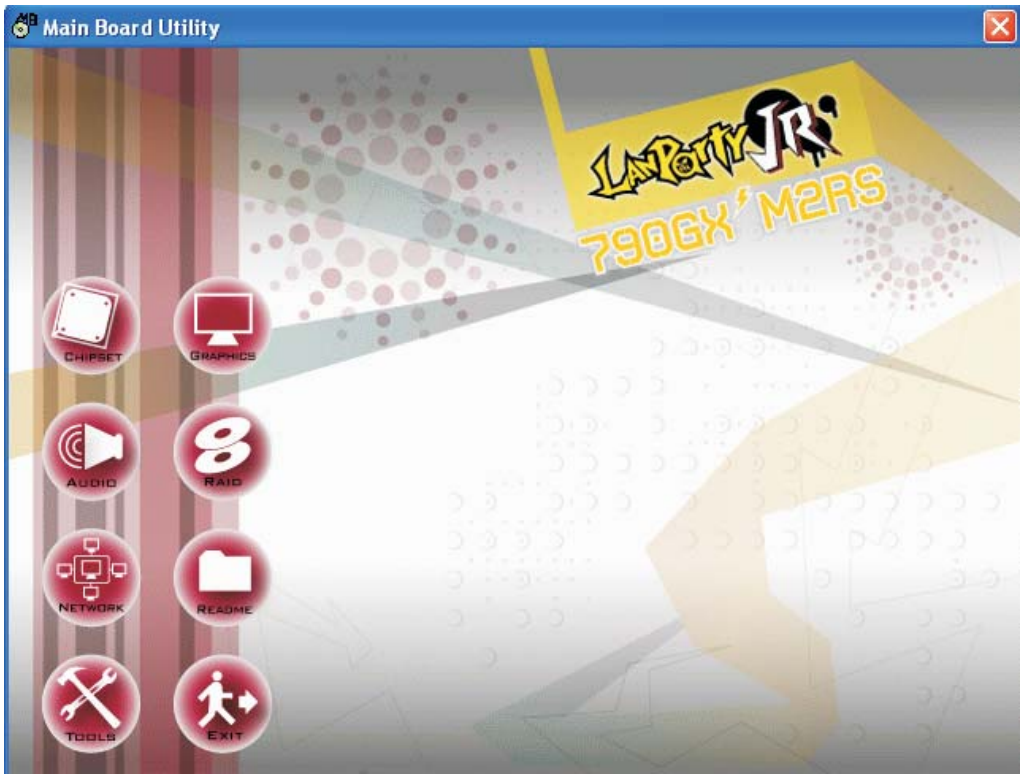
8. Press <Y> to flash the new BIOS.

Chapter 4 - Supported Software

Drivers, Utilities and Software Applications

The CD that came with the system board contains drivers, utilities and software applications required to enhance the performance of the system board.

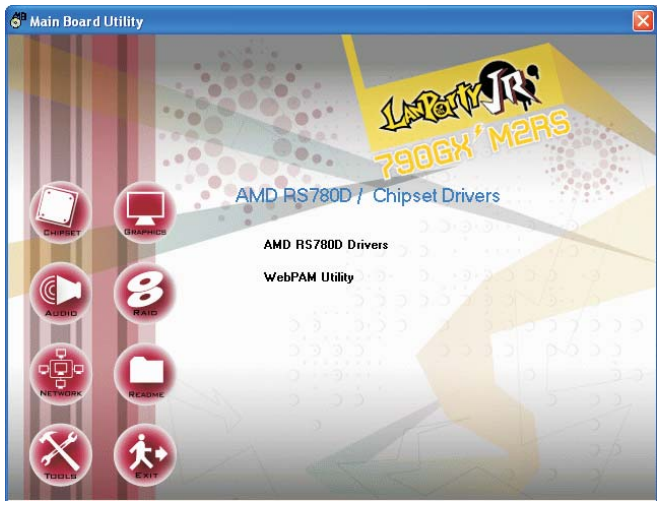
Insert the CD into a CD-ROM drive. The autorun screen will appear. If after inserting the CD, "Autorun" did not automatically start, please go directly to the root directory of the CD and double-click "Setup".



AMD RS780D Drivers

On the left side of the autorun screen, click the "CHIPSET" icon.

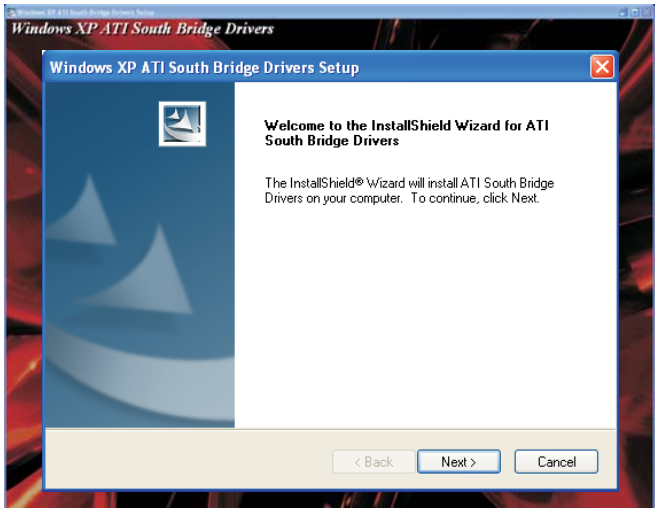
1. Click "AMD RS780D Drivers" on the main menu.



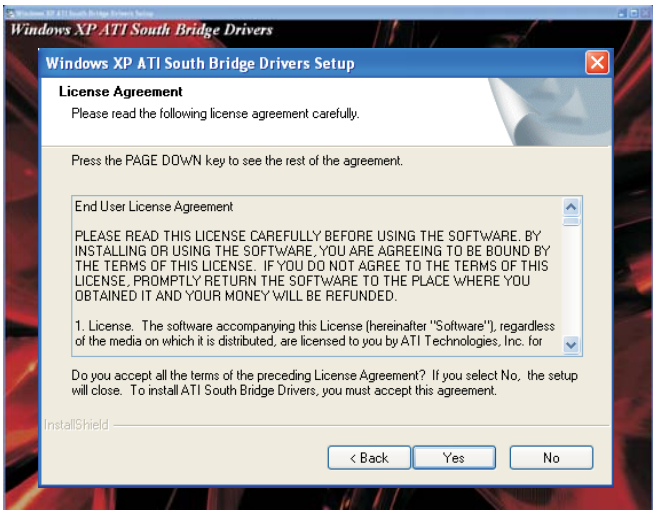
2. Click Install to install to the destination folder or click Browse to select another folder.

6-9_xp_sb_35744 Setup: Installation Folder
Setup will install 6-9_xp_sb_35744 in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.
Destination Folder
C:\ATI\SUPPORT\6-9_xp_sb_35744
Browse...
Space required: 3.8MB
Space available: 93.5GB
Cancel
Nullsoft Install System v2.02
Install

3. Setup is now ready to install the driver. Click Next.

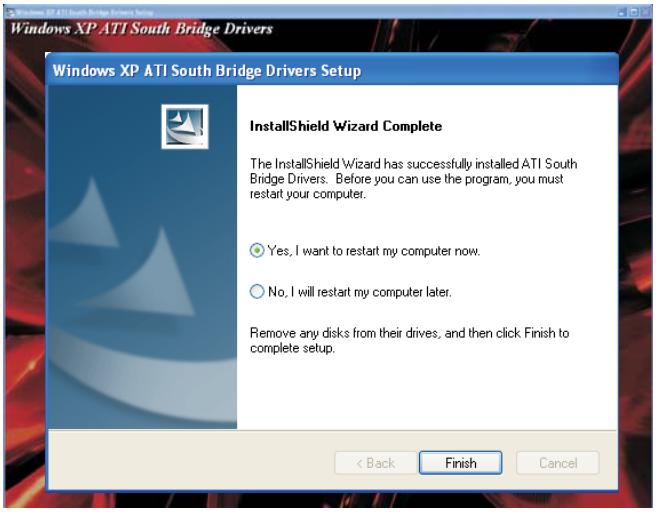

Windows XP ATI South Bridge Drivers
Windows XP ATI South Bridge Drivers Setup
Welcome to the InstallShield Wizard for ATI South Bridge Drivers
The InstallShield® Wizard will install ATI South Bridge Drivers on your computer. To continue, click Next.
< Back
Next >
Cancel

4. Read the license agreement then click Yes.


Windows XP ATI South Bridge Drivers
Windows XP ATI South Bridge Drivers Setup
License Agreement
Please read the following license agreement carefully.
Press the PAGE DOWN key to see the rest of the agreement.
End User License Agreement
PLEASE READ THIS LICENSE CAREFULLY BEFORE USING THE SOFTWARE. BY INSTALLING OR USING THE SOFTWARE, YOU ARE AGREEING TO BE BOUND BY THE TERMS OF THIS LICENSE. IF YOU DO NOT AGREE TO THE TERMS OF THIS LICENSE, PROMPTLY RETURN THE SOFTWARE TO THE PLACE WHERE YOU OBTAINED IT AND YOUR MONEY WILL BE REFUNDED.
1. License. The software accompanying this License (hereinafter "Software"), regardless of the media on which it is distributed, are licensed to you by ATI Technologies, Inc. for
Do you accept all the terms of the preceding License Agreement? If you select No, the setup will close. To install ATI South Bridge Drivers, you must accept this agreement.
InstallShield
< Back
Yes
No

5. Click "Yes, I want to restart my computer now" then click Finish.

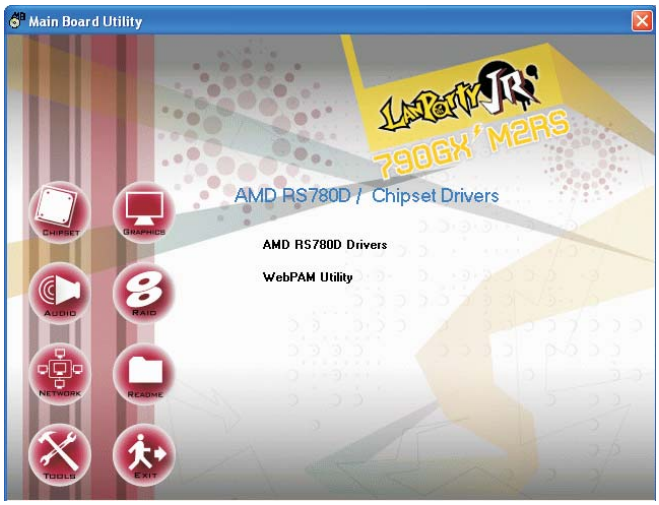
   Restarting the system will allow the new driver installation to take effect.


Windows XP ATI South Bridge Drivers
Windows XP ATI South Bridge Drivers Setup
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed ATI South Bridge Drivers. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

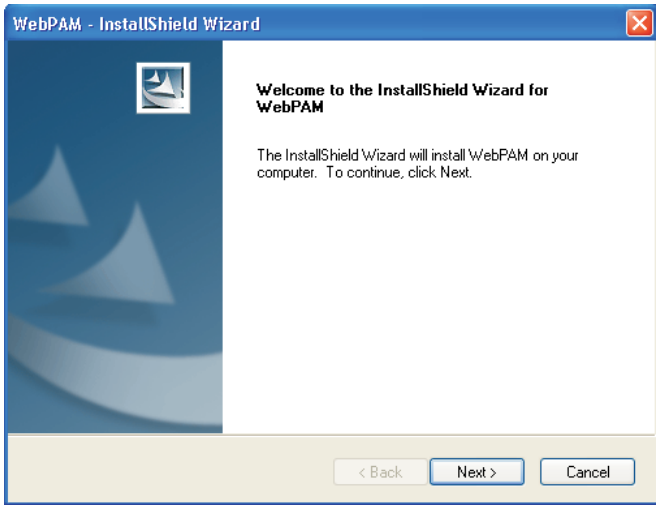
WebPAM Utility

On the left side of the autorun screen, click the "CHIPSET" icon.

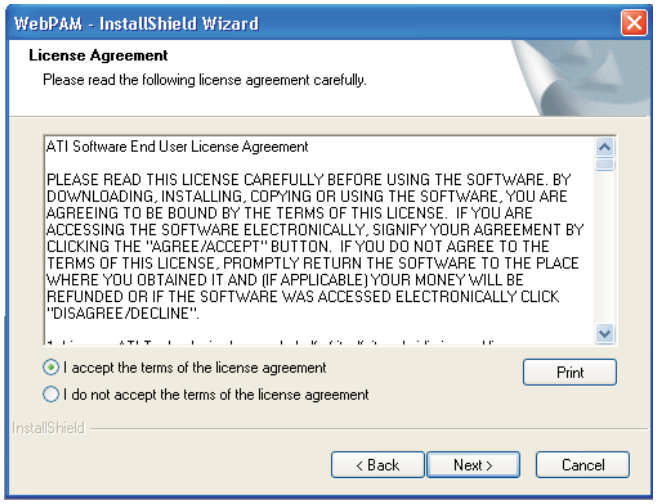
1. Click "WebPAM Utility" on the main menu.



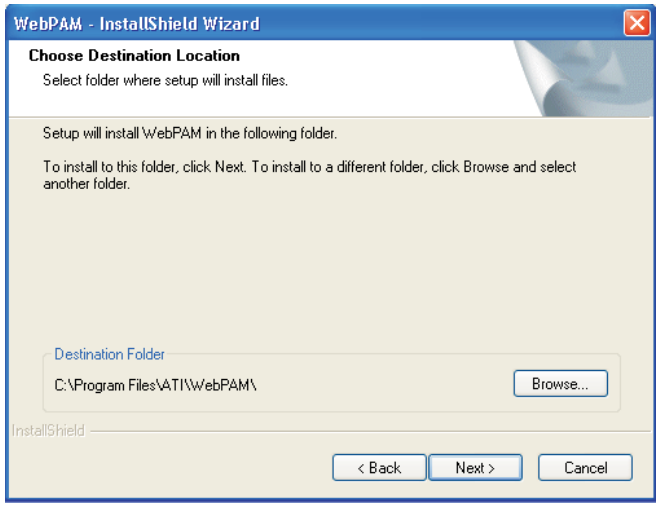
2. You are now ready to install the driver. Click Next.


WebPAM - InstallShield Wizard
Welcome to the InstallShield Wizard for WebPAM
The InstallShield Wizard will install WebPAM on your computer. To continue, click Next.
< Back
Next >
Cancel

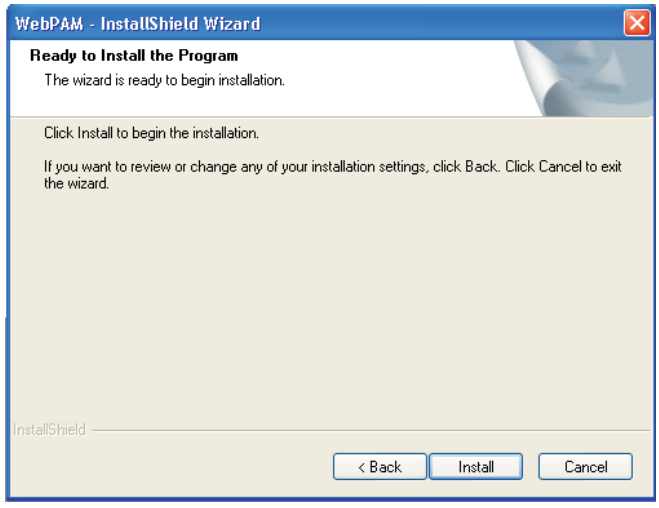
3. Read the license agreement then click "I accept the terms of the license agreement". Click Next.


WebPAM - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
ATI Software End User License Agreement
PLEASE READ THIS LICENSE CAREFULLY BEFORE USING THE SOFTWARE. BY DOWNLOADING, INSTALLING, COPYING OR USING THE SOFTWARE, YOU ARE AGREEING TO BE BOUND BY THE TERMS OF THIS LICENSE. IF YOU ARE ACCESSING THE SOFTWARE ELECTRONICALLY, SIGNIFY YOUR AGREEMENT BY CLICKING THE "AGREE/ACCEPT" BUTTON. IF YOU DO NOT AGREE TO THE TERMS OF THIS LICENSE, PROMPTLY RETURN THE SOFTWARE TO THE PLACE WHERE YOU OBTAINED IT AND (IF APPLICABLE) YOUR MONEY WILL BE REFUNDED OR IF THE SOFTWARE WAS ACCESSED ELECTRONICALLY CLICK "DISAGREE/DECLINE".
I accept the terms of the license agreement
I do not accept the terms of the license agreement
Print
InstallShield
< Back
Next >
Cancel

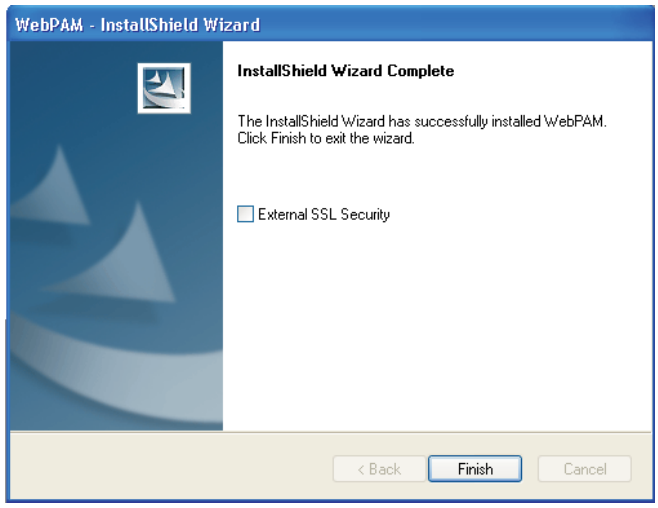
4. Click Next to install to the destination folder or click Browse to select another folder.


WebPAM - InstallShield Wizard
Choose Destination Location
Select folder where setup will install files.
Setup will install WebPAM in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\Program Files\ATI\WebPAM\
Browse...
InstallShield
< Back
Next >
Cancel

5. Click Next to begin installation.


WebPAM - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

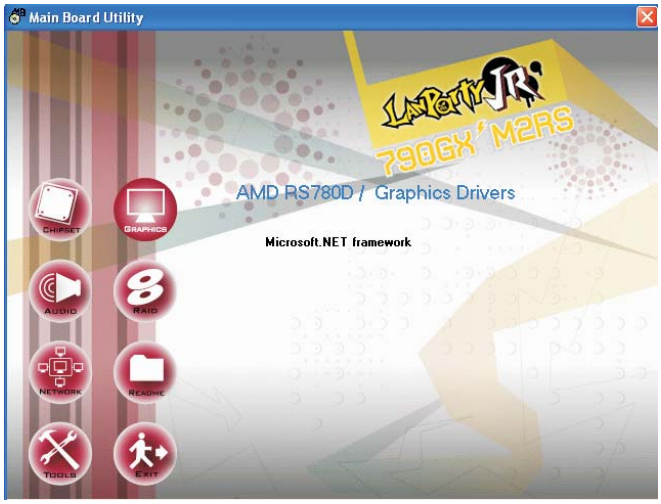
6. Click Finish.



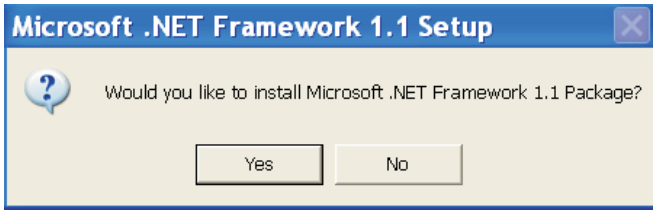
Microsoft .NET Framework

On the left side of the autorun screen, click the "GRAPHICS" icon.

1. Click "Microsoft .NET Framework" on the main menu.



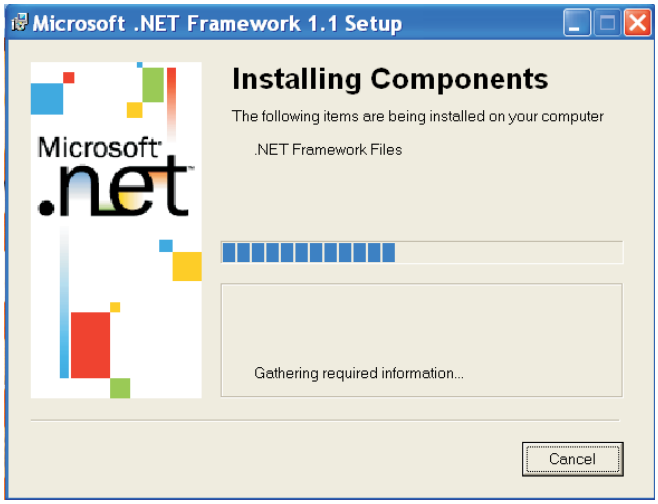
2. Click "Yes" to install the Framework package.



3. Setup is currently installing the files onto your computer.

   Follow the prompts on the screen to complete installation.

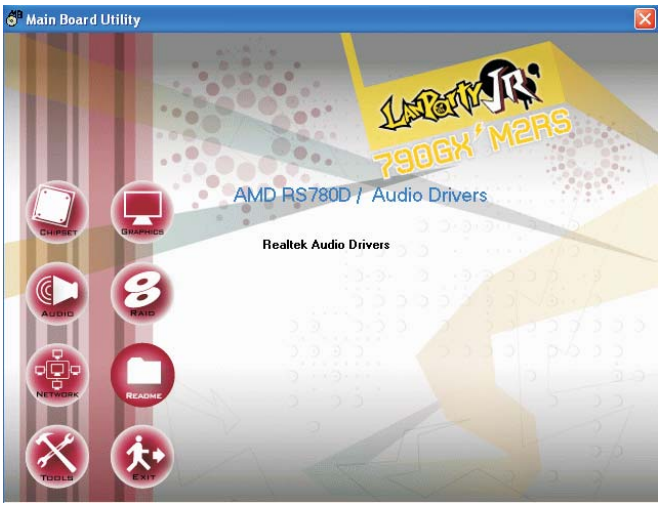
   Restart the system to allow the new driver installation to take effect.



Realtek Audio Driver

On the left side of the autorun screen, click the "AUDIO" icon.

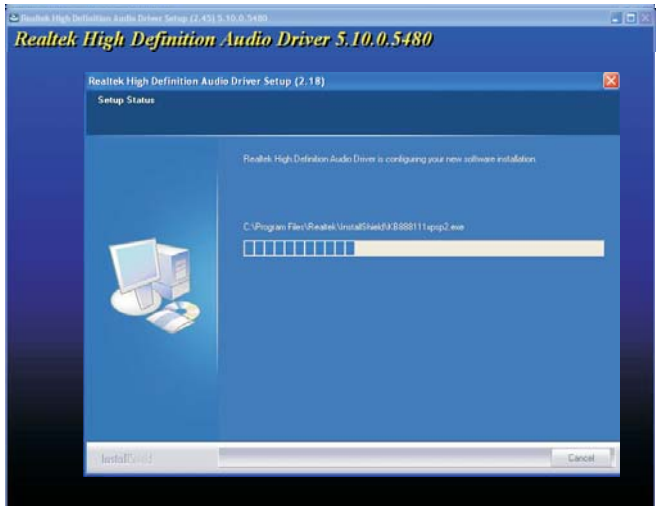
1. Click "Realtek Audio Driver" on the main menu.



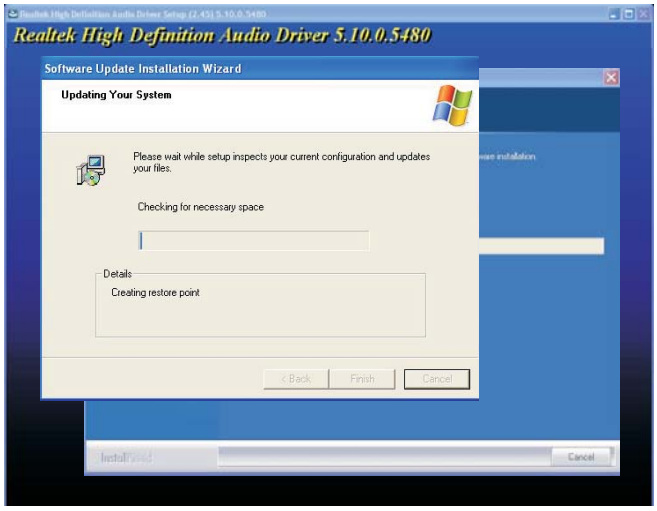
2. Setup is now ready to install the driver. Click Next to continue.

Realtek High Definition Audio Driver 5.10.0.5480
Realtek High Definition Audio Driver Setup (2.45) 5.10.0.5480
Welcome to the InstallShield Wizard for Realtek High Definition Audio Driver
The InstallShield Wizard will install Realtek High Definition Audio Driver on your computer. To continue, click Next.
< Back
Next >
Cancel

3. Setup is currently installing the driver.


Realtek High Definition Audio Driver 5.10.0.5480
Realtek High Definition Audio Driver Setup (2.18)
Setup Status
Realtek High Definition Audio Driver is configuring your new software installation.
Cancel

4. Setup is now configuring the new software installation.



5. Click "Yes, I want to restart my computer now" then click Finish.

   Restarting the system will allow the new driver installation to take effect.

Realtek High Definition Audio Driver 5.10.0.5480
Realtek High Definition Audio Driver Setup (2.45) 5.10.0.5480
Maintenance Complete
InstallShield Wizard has finished performing maintenance operations on Realtek High Definition Audio Driver.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
InstallShield
< Back
Finish
Cancel

Marvell LAN Driver

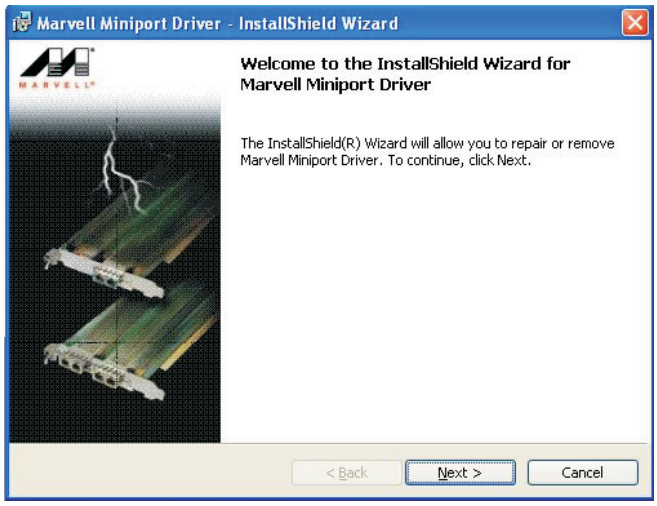
On the left side of the autorun screen, click the "NETWORK" icon.

1. Click "Marvell LAN Driver" on the main menu.

2. Setup is preparing the installation wizard.

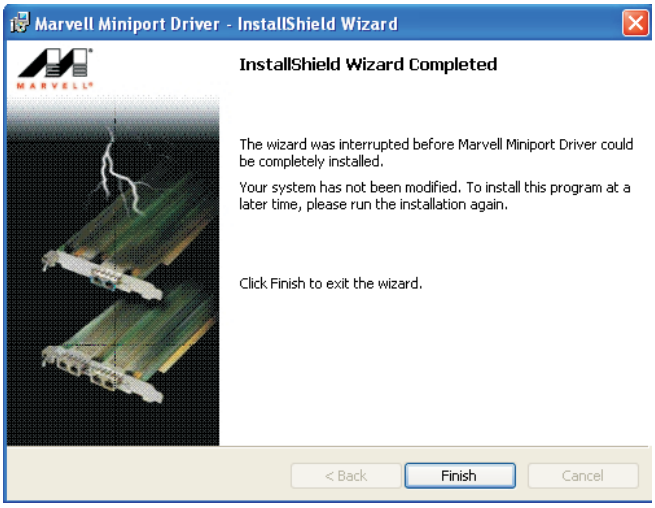
InstallShield Wizard
Marvell Miniport Driver Setup is preparing the InstallShield Wizard, which will guide you through the program setup process. Please wait.
Checking Operating System Version
Cancel

3. Setup will now install the driver. Click Next.


Marvell Miniport Driver - InstallShield Wizard
Welcome to the InstallShield Wizard for Marvell Miniport Driver
The InstallShield(R) Wizard will allow you to repair or remove Marvell Miniport Driver. To continue, click Next.
< Back
Next >
Cancel

4. Click Finish.

5. Reboot the system for the driver to take effect.

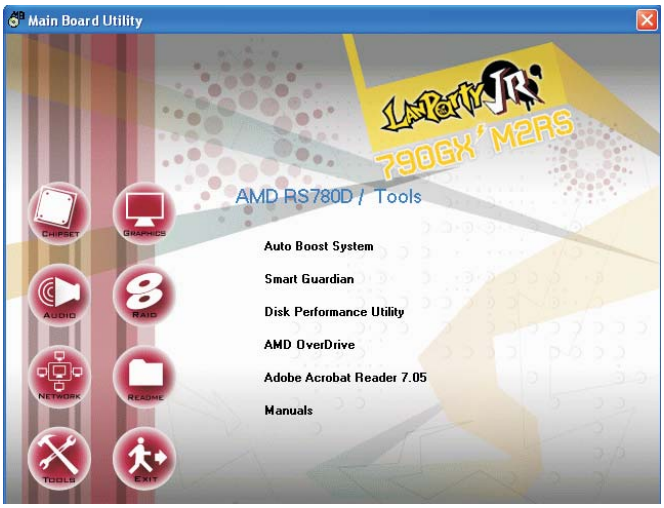

Marvell Miniport Driver - InstallShield Wizard
InstallShield Wizard Completed
The wizard was interrupted before Marvell Miniport Driver could be completely installed.
Your system has not been modified. To install this program at a later time, please run the installation again.
Click Finish to exit the wizard.
< Back
Finish
Cancel

Smart Guardian

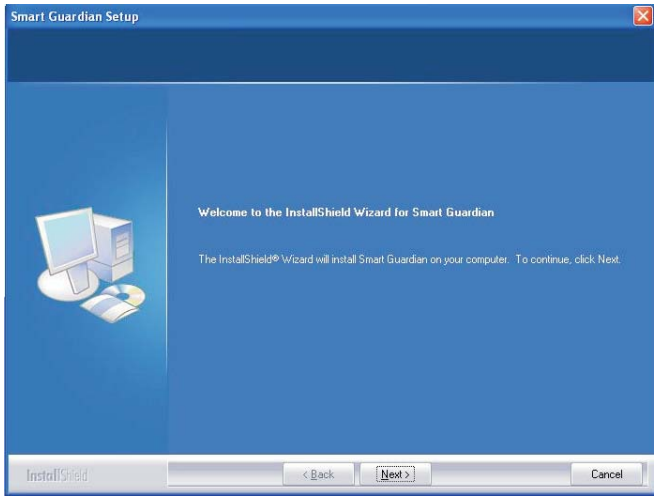
The Smart Guardian utility is capable of monitoring the system's temperature, fan speed, voltage, etc. and allows you to manually set a range (Highest and Lowest Limit) to the items being monitored. If the settings/values are over or under the set range, a warning message will pop-up. The utility can also be configured so that a beeping alarm will sound whenever an error occurs. We recommend that you use the "Default Setting" which is the ideal setting that would keep the system in good working condition.

On the left side of the autorun screen, click the "TOOLS" icon.

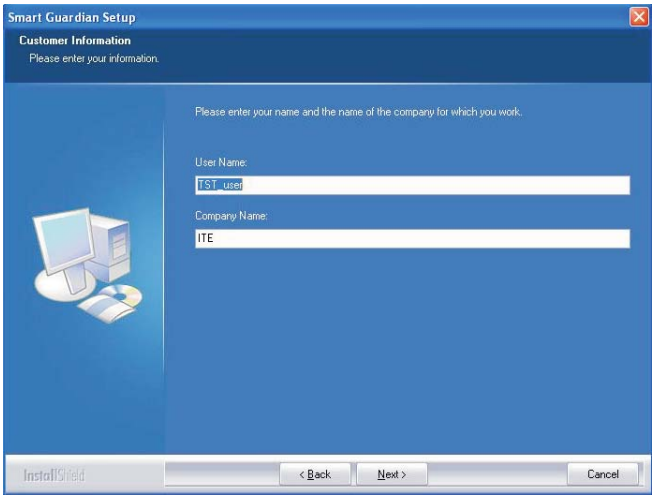
1. Click "Smart Guardian" on the main menu.



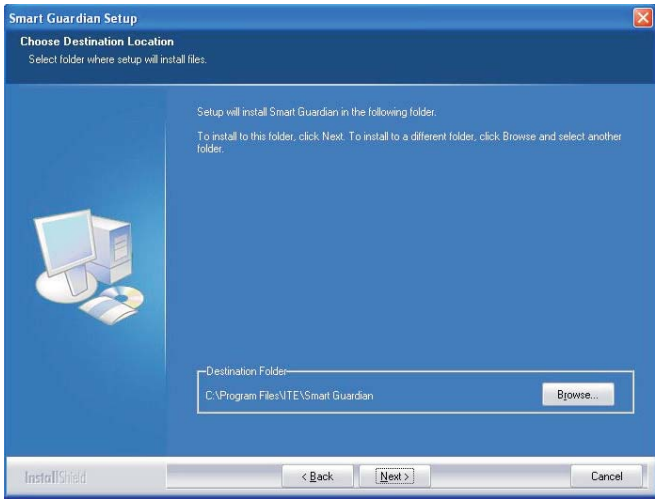
2. Setup is now ready to install the utility. Click Next.


Smart Guardian Setup
Welcome to the InstallShield Wizard for Smart Guardian
The InstallShield® Wizard will install Smart Guardian on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

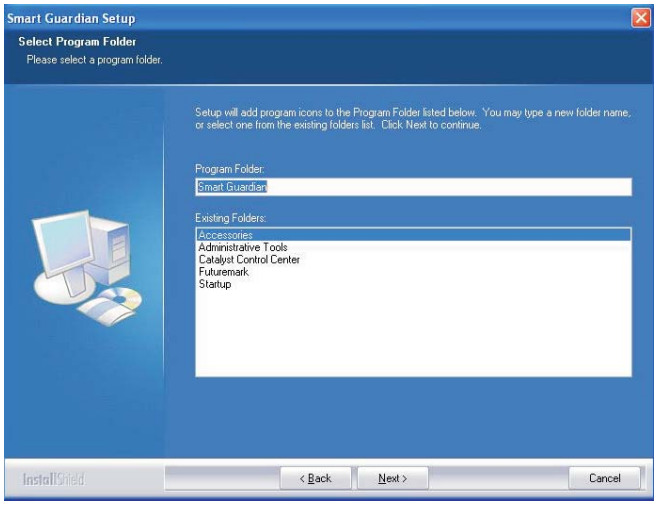
3. Enter the necessary information then click Next.



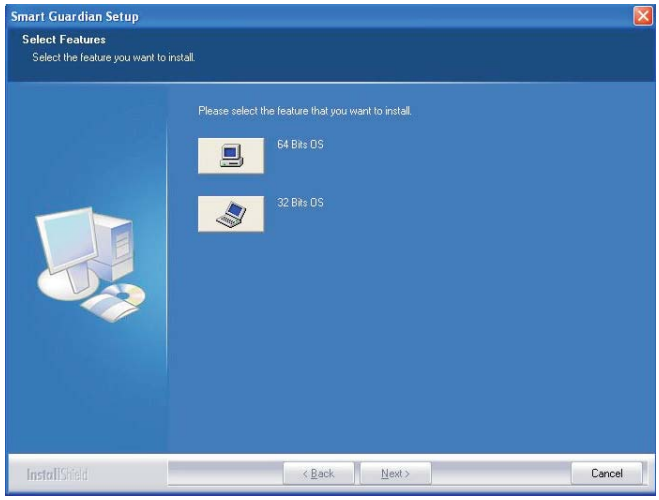
4. Click Next to install to the designated folder or click Browse to select another folder.


Smart Guardian Setup
Choose Destination Location
Select folder where setup will install files.
Setup will install Smart Guardian in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\Program Files\ITE\Smart Guardian
Browse...
InstallShield
< Back
Next >
Cancel

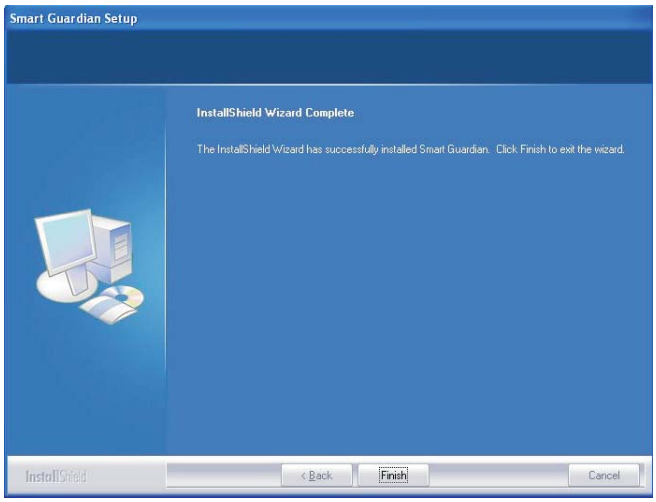
5. Click Next to add the program icon to the Program Folder.


Smart Guardian Setup
Select Program Folder
Please select a program folder.
Setup will add program icons to the Program Folder listed below. You may type a new folder name, or select one from the existing folders list. Click Next to continue.
Program Folder:
Smart Guardian
Existing Folders:
Accessories
Administrative Tools
Catalyst Control Center
Futuremark
Startup
InstallShield
< Back
Next >
Cancel

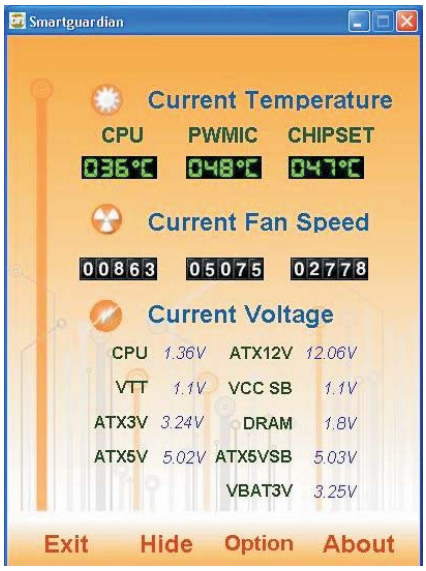
6. Select the option in accordance to the operating system that you are using then click Next.



7. Click Finish. Reboot the system for the driver to take effect.



8.. After rebooting the system, you will find the Smart Guardian icon displayed on the screen. Double-click the icon the run the utility.



USB 2.0 Drivers

Windows® XP

If your Windows® XP CD already includes Service Pack 1, the USB 2.0 driver will automatically install when you install the operating system. If the CD does not include Service Pack 1, it is available for download at Microsoft's Windows Update website.

Windows® 2000

If your Windows® 2000 CD already includes Service Pack 4, the USB 2.0 driver will automatically install when you install the operating system. If the CD does not include Service Pack 4, it is available for download at Microsoft's Windows Update website.

Installation Notes

1. "Autorun" ONLY supports the Windows® 2000, Windows NT® 4.0 and Windows® XP operating systems. If after inserting the CD, "Autorun" did not automatically start (which is, the Main Board Utility CD screen did not appear), please go directly to the root directory of the CD and double-click "Setup".

2. All steps or procedures to install software drivers are subject to change without notice as the softwares are occassionally updated. Please go to DFI's web site at "http://www.dfi.com/support1/download2.asp" for the latest version of the drivers or software applications.

Chapter 5 - RAID

The AMD SB750 chip alows configuring RAID on Serial ATA drives. It supports RAID 0/1/0+1(10)/5/JBOD/AHCI .

RAID Levels

RAID 0 (Striped Disk Array without Fault Tolerance)

RAID 0 uses two new identical hard disk drives to read and write data in parallel, interleaved stacks. Data is divided into stripes and each stripe is written alternately between two disk drives. This improves the I/O performance of the drives at different channel; however it is not fault tolerant. A failed disk will result in data loss in the disk array.

RAID 1 (Mirroring Disk Array with Fault Tolerance)

RAID 1 copies and maintains an identical image of the data from one drive to the other drive. If a drive fails to function, the disk array management software directs all applications to the other drive since it contains a complete copy of the drive's data. This enhances data protection and increases fault tolerance to the entire system. Use two new drives or an existing drive and a new drive but the size of the new drive must be the same or larger than the existing drive.

RAID 0+1 (Striping and Mirroring)

RAID 0+1 is a combination of data striping and data mirroring providing the benefits of both RAID 0 and RAID 1. Use four new drives or an existing drive and three new drives for this configuration.

RAID 5

RAID 5 stripes data and parity information across hard drives. It is fault tolerant and provides better hard drive performance and more storage capacity.

Settings

To enable the RAID function, the following settings are required.

1. Connect the Serial ATA drives.
2. Configure Serial ATA in the Award BIOS.
3. Configure RAID in the RAID BIOS.
4. Install the RAID driver during OS installation.

Step 1: Connect the Serial ATA Drives

Refer to chapter 2 for details on connecting the Serial ATA drives.

Important:

1. *Make sure you have installed the Serial ATA drives and connected the data cables otherwise you won't be able to enter the RAID BIOS utility.*
2. *Treat the cables with extreme caution especially while creating RAID. A damaged cable will ruin the entire installation process and operating system. The system will not boot and you will lost all data in the hard drives. Please give special attention to this warning because there is no way of recovering back the data.*

Step 2: Configure Serial ATA in the Award BIOS

1. Power-on the system then press <Del> to enter the main menu of the Award BIOS.
2. Configure Serial ATA in the appropriate fields.
3. Press <Esc> to return to the main menu of the BIOS setup utility. Select "Save & Exit Setup" then press <Enter>.
4. Type <Y> and press <Enter>.
5. Reboot the system.

Step 3: Configure RAID in the RAID BIOS

When the system powers-up and all drives have been detected, the AMD BIOS status message screen will appear. Press the <F4> key to enter the utility. The utility allows you to build a RAID system on Serial ATA drives.

Step 4: Install the RAID Driver During OS Installation

The RAID driver must be installed during the Windows® XP installation using the F6 installation method. This is required in order to install the operating system onto a hard drive or RAID volume when in RAID mode or onto a hard drive when in AHCI mode.

1. Start Windows Setup by booting from the installation CD.
2. Press <F6> when prompted in the status line with the 'Press F6 if you need to install a third party SCSI or RAID driver' message.
3. Press <S> to "Specify Additional Device".
4. At this point you will be prompted to insert a floppy disk containing the RAID driver. Insert the provided RAID driver diskette.
5. Locate for the drive where you inserted the diskette then select RAID or AHCI controller that corresponds to your BIOS setup. Press <Enter> to confirm.

You have successfully installed the driver. However you must continue installing the OS. Leave the floppy disk in the floppy drive until the system reboots itself because Windows setup will need to copy the files again from the floppy disk to the Windows installation folders. After Windows setup has copied these files again, remove the floppy diskette so that Windows setup can reboot as needed.

Chapter 6 - ATI CrossFire Technology

ATI's CrossFire technology drives your PC to a new peak of performance. By connecting a Radeon CrossFire Edition graphics card and a standard PCI Express graphics card, the power of these multiple GPUs (Graphics Processing Units) within the system will accelerate your gaming performance and improve image quality.

Aside from dual GPU for 3D rendering, CrossFire's new feature - asymmetric processing technology, allows adding another dedicated GPU for physics processing. The 3 GPUs simultaneously handle Data Parallel Processing (DPP) computing tasks such as game rendering and physics in a single system. This provides more realistic cutting edge 3D graphics to run at high resolutions.

CrossFireX™

CrossFire's key objective is to maximize the speed of a multi-GPU system. This is achieved by dividing the rendering workload to each of the two GPUs. When each GPU has completed its assigned tasks for a given frame, the Compositing Engine on the CrossFire Edition graphics card combines the results from each GPU (according to the selected operating mode) then sends the final frames out to the display device. The result will be a complete frame rendered at up to twice the performance of a single graphics card.

3D games are made up of a number of different tasks such as input processing, game state updating, artificial intelligence, physics, rendering, networking, audio, etc. The Data Parallel Processing (DPP) computing tasks simultaneously executes a common set of instructions across a large set of input data. Besides rendering, the detailed physics simulations allow these GPUs to take on an expanded role in game computing. Multiple GPUs can enhance a game by providing generous amounts of additional computing power for certain specific tasks.

Features

Regardless of the type of operating mode used, the completed frames from both GPUs are sent to the Compositing Engine on the CrossFire Edition graphics card, which then sends them on to the display device.

- **Supertile Mode**

  Supertiling divides your screen image into subsections like "tiles" in alternating tile pattern such that half of the tiles are assigned to each of the two GPUs.

- **Scissor Mode**

  In Scissor mode, each frame is split into two sections, either horizontal or vertical, with each section being processed by one GPU.

- **Alternate Frame Rendering (AFR)**

  In AFR mode, all even frames are rendered on one GPU, while all odd frames are rendered on the other.

- **Super AA (Anti-Aliasing)**

  The Super AA mode provides even higher quality anti-aliasing on multi-GPU systems. It works by having each GPU render the same frame with anti-aliasing enabled but using different sample locations for each. When both versions of the frame are completed, they are blended in the CrossFire Compositing engine. The resulting image is twice the number of samples, so 4x and 6x AA become 8x and 12x Super AA respectively.

Graphics Cards Requirements

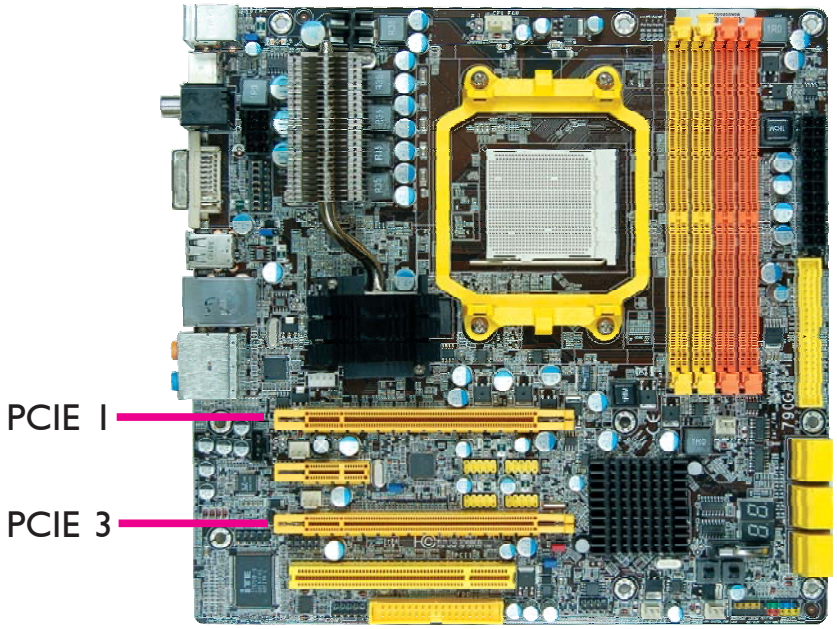
1. One Radeon® X850 / Radeon® X800 CrossFire Edition graphics card.
2. One standard PCI Express Radeon® X850 or Radeon® X800 graphics card.

   The Radeon® X850 CrossFire Edition card works with any standard PCI Express Radeon X850 graphics card (Radeon X850 PRO, Radeon X850 XT or Radeon X850 XT Platinum Edition) from ATI or any of its partners including cards previously sold.

   The Radeon® X800 CrossFire Edition card works with any standard PCI Express Radeon X800 graphics card (Radeon X800, Radeon X800 PRO, Radeon X800 XL, Radeon X800 XT or Radeon X800 XT Platinum Edition) from ATI or any of its partners.

Note:
If the clock speed of the CrossFire Edition graphics card and standard PCI Express graphics card are different, both cards will operate at their individual clock speeds.

The PCI Express x16 Slots

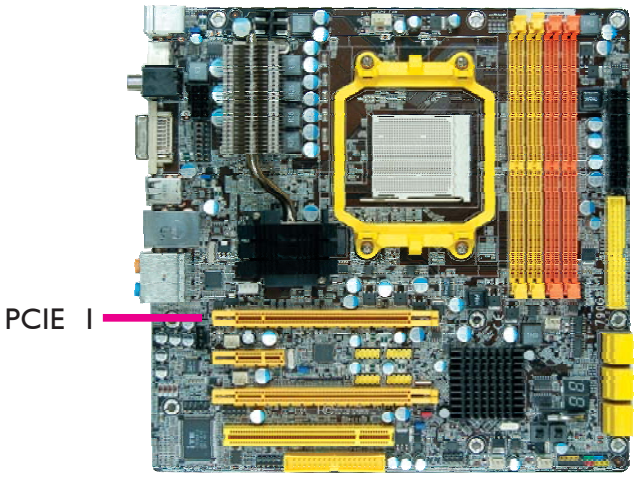


Two graphics cards support CrossFireX™; each operating at x8 (8-lane ports) bandwidth.

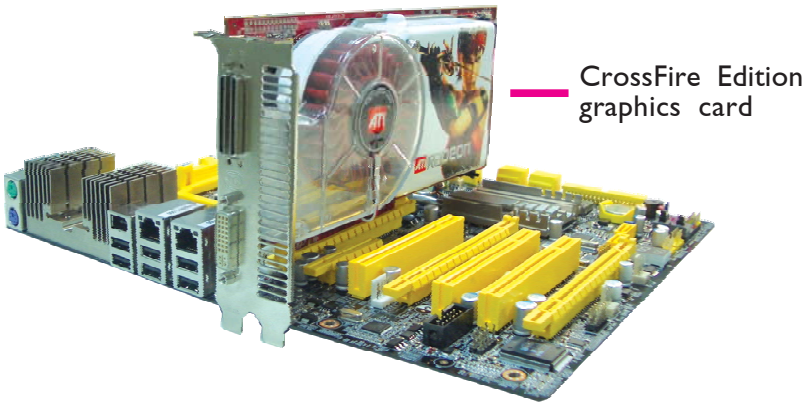
CrossFireX™ Setup

Note:
The system board used in some of the illustrations may not resemble the actual board. These illustrations are for reference only.

1. Power-off the system and monitor then unplug the power cord.
2. Remove the screw of the bracket that is opposite the PCIE 1 slot then remove the bracket.

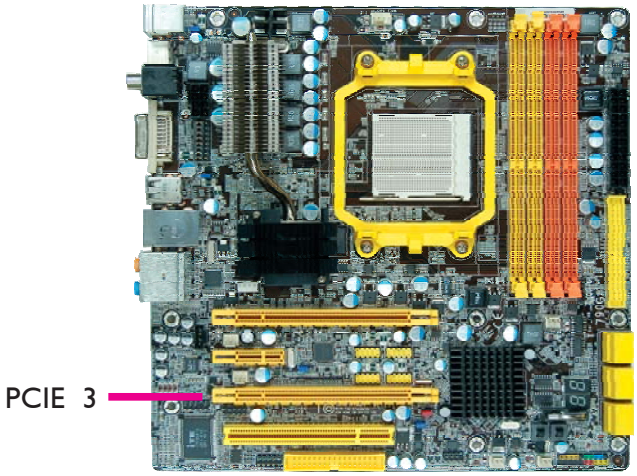


3. Align the CrossFire Edition graphics card (Master) above the PCIE 1 slot then press it down firmly until it is completely seated in the slot.

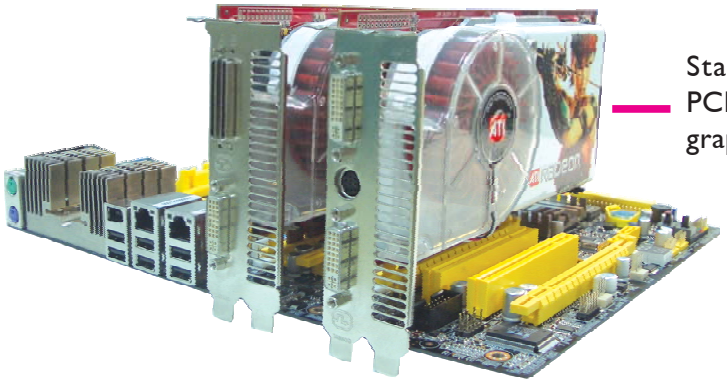


4. Secure the graphics card with the screw you removed in step 2.

5. Remove the screw of the bracket that is opposite the PCIE 3 slot then remove the bracket.



6. Align the standard PCI Express graphics card (Slave) above the PCIE 3 slot then press it down firmly until it is completely seated in the slot.



7. Secure the graphics card with the screw you removed in step 5.
8. Connect the two graphics cards by using the provided cable.
9. Connect auxiliary power source from the power supply unit to the graphics cards.

10. Install the graphics cards' drivers then restart the system for the drivers to take effect.

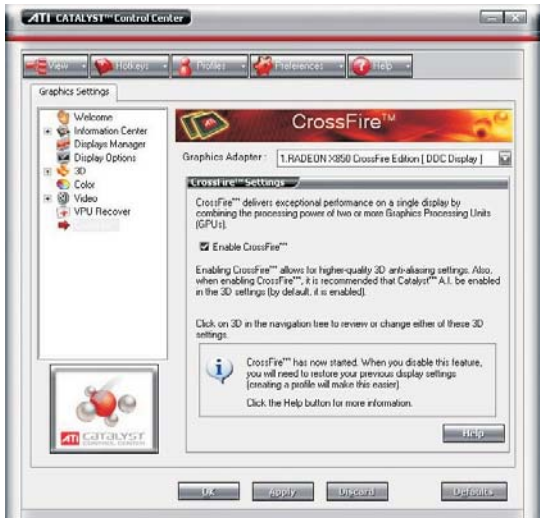
11. When you enter the operating system, you will notice the ATI Catalyst Control Center icon added onto your desktop. Double-click this icon.

12. Click the View tab then select Custom View.

13. In the Graphics Settings menu (left side of screen), click CrossFire. The CrossFire Settings screen will appear on the main window. Click "Enable CrossFire" then click "Yes" to continue.

ATI CATALYST™ Control Center
Graphics Settings
Welcome
Information Center
Displays Manager
Display Options
3D
Color
Video
VPU Recover
CrossFire™
Graphics Adapter :
1.RADEON X850 CrossFire Edition [DDC Display]
CrossFire™ Settings
Enable CrossFire™
ATI Enabling CrossFire™
Please ensure that a monitor is connected to your CrossFire™ Edition card. By enabling CrossFire™, any display devices connected to the regular adapter will be automatically disabled.
In addition, any unapplied settings you may have changed elsewhere will be immediately applied.
Do you wish to continue?
Don't display this message again

14. The screen on the right indicates that CrossFire has been enabled. Make sure to restart the PC for CrossFire to take effect.


ATI CATALYST™ Control Center
View
Hotkeys
Profiles
Preferences
Help
Graphics Settings
Welcome
Information Center
Displays Manager
Display Options
3D
Color
Video
VPU Recover
CrossFire™
Graphics Adapter :
1.RADEON X850 CrossFire Edition [DDC Display]
CrossFire™ Settings
CrossFire™ delivers exceptional performance on a single display by combining the processing power of two or more Graphics Processing Units (GPUs).
Enable CrossFire™
Enabling CrossFire™ allows for higher-quality 3D anti-aliasing settings. Also, when enabling CrossFire™, it is recommended that Catalyst™ A.I. be enabled in the 3D settings (by default, it is enabled).
Click on 3D in the navigation tree to review or change either of these 3D settings.
CrossFire™ has now started. When you disable this feature, you will need to restore your previous display settings (creating a profile will make this easier).
Click the Help button for more information.
Help
OK
Apply
Discard
Defaults

Hybrid CrossFireX™

Based on the ATI CrossFire™ multi-GPU technology, the ATI Hybrid CrossFireX™ takes gaming experience to the next level. Hybrid CrossFireX™ is a combination of the integrated graphics and a discrete graphics card delivering high quality gaming images and improved performance. Its multi-GPU performance capabilities enhance gaming performance, productivity and platform power efficiency to the mainstream PC.

Basic Requirements

1. Windows® Vista operating system.
2. A Hybrid-CrossFireX™-supported discrete graphics card.
3. Minimum of 1GB system memory.
4. 256MB onboard graphics RAM.

Hybrid CrossFireX™ Setup

1. Configure the BIOS.
   Set the "UMA Frame Buffer Size" field to 256MB.
   Set the "Surround View" field to Enabled.

   Refer to the "IGX Configuration" section (Advanced Chipset Features submenu of the Award BIOS) in chapter 3 for more information.

2. Install the AMD RS780D chipset driver then restart the system for the new driver to take effect.

   Refer to the "AMD RS780D Driver" section in chapter 4 for more information.

3. Install a graphics card. Hybrid CrossFireX™ supports only one discrete graphics card to work with the integrated GPU.

4. Install the graphics driver. Refer to the "ATI Radeon Driver" section in chapter 4 for more information.

5. Run the ATI Catalyst Control Center utility to enable CrossFire. Refer to the previous pages in this chapter for more information.

Chapter 7 - Cool'n'Quiet Technology

Cool'n'Quiet Technology

The AMD Cool'n'Quiet™ technology allows the system to detect the CPU's tasks and utilization status. When the CPU's task slows down, the system effectively lowers power consumption by lowering its CPU speed and voltage, subsequently decreasing its noise level.

To enable the Cool'n'Quiet™ technology, the following settings are required.

1. Install the Cool'n'Quiet™ driver.
2. Configure Power Management in Windows.

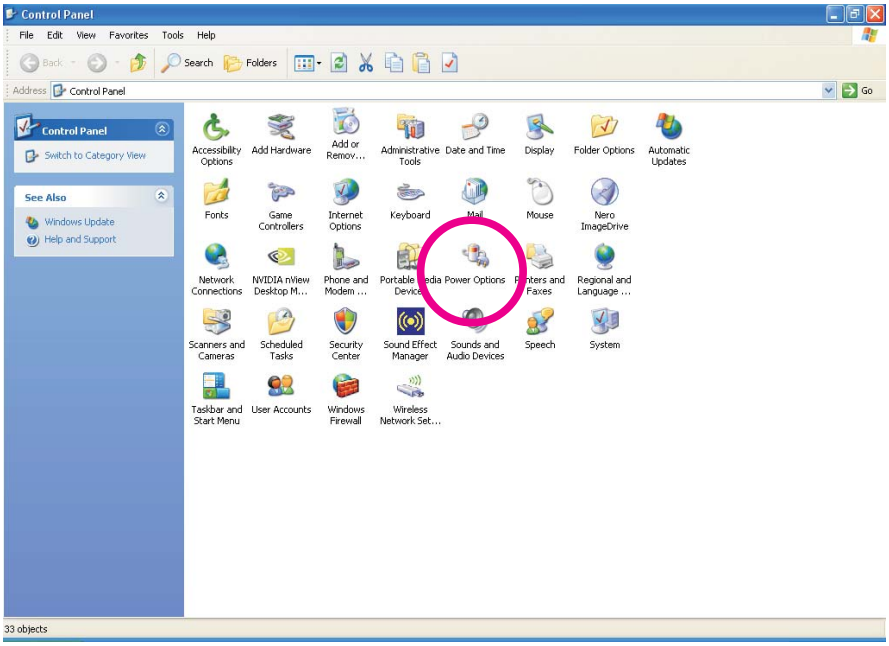
Step 1: Install the Cool'n'Quiet™ Driver

AMD's website provides free download of the Cool'n'Quiet™ driver. Make sure to install the appropriate driver for the CPU that you are using.

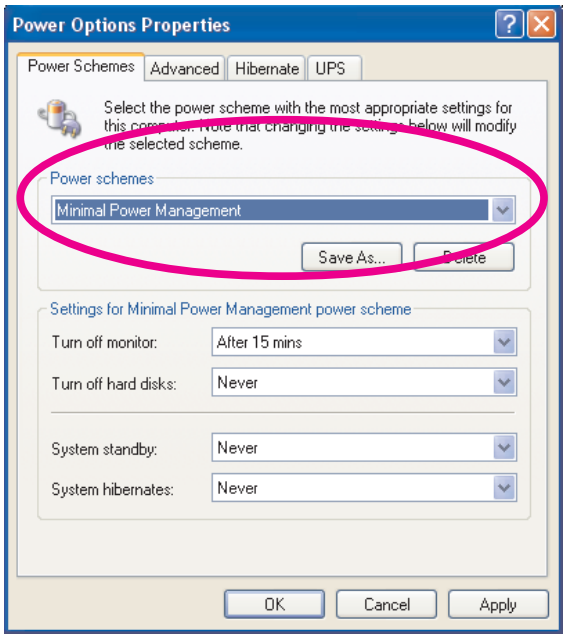
Step 2: Configure Power Management in Windows

1. On the Windows desktop, click Start then select Control Panel.

2. In Control Panel, double-click the Power Options icon.



3. In the Power Schemes tab, select Minimal Power Management under the Power schemes section then click OK.



Appendix A - ABS: Auto Boost System

The ABS (Auto Boost System) technology provides the convenience of saving and loading several OC settings. It allows you to use the best OC setting to optimize your system's performance. You can "Auto Boost" your system by simply pressing the <F1> key.

ABS provides the following functions that are easy for users to operate.

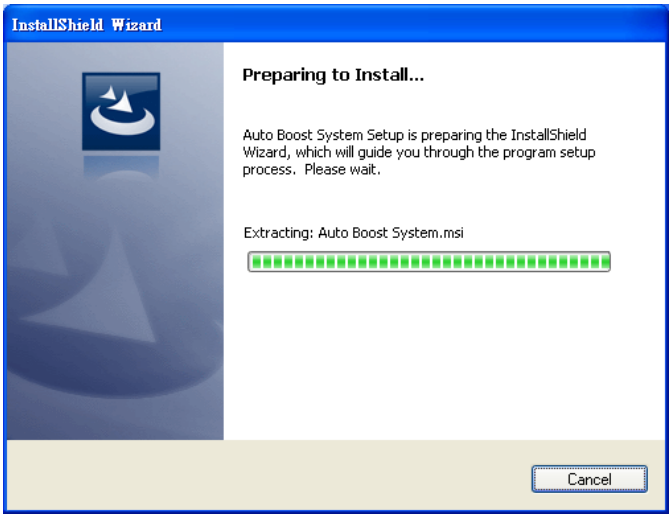
- Backup OC profile
- Load OC profile
- Exchange OC profile

Installing ABS

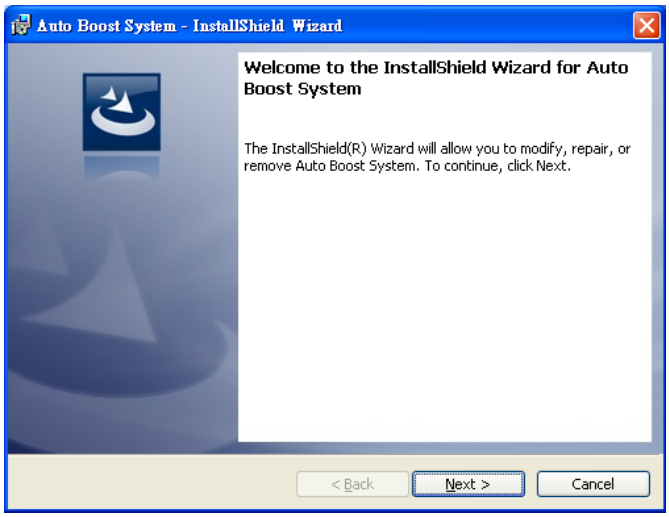
1. The ABS utility is included in the provided CD. Insert the CD into a CD-ROM drive. On the left side of the autorun screen, click the "TOOLS" icon.

2. Click "Auto Boost System" on the main menu.

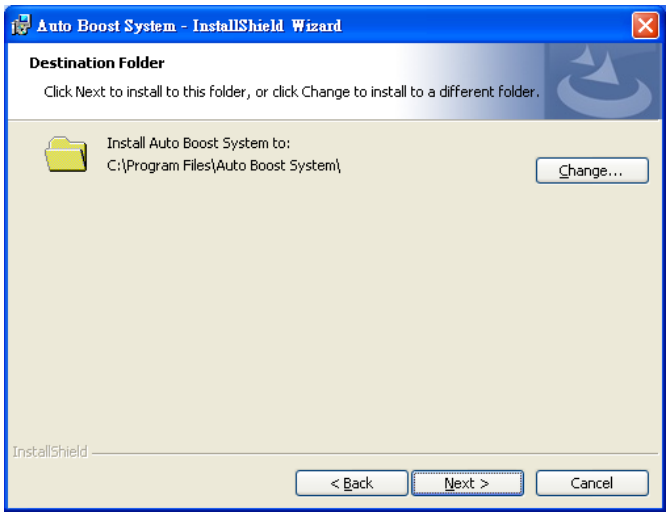
3. The installation wizard is extracting the files needed to install the utility. The wizard will lead you to complete the installation.


InstallShield Wizard
Preparing to Install...
Auto Boost System Setup is preparing the InstallShield Wizard, which will guide you through the program setup process. Please wait.
Extracting: Auto Boost System.msi
Cancel

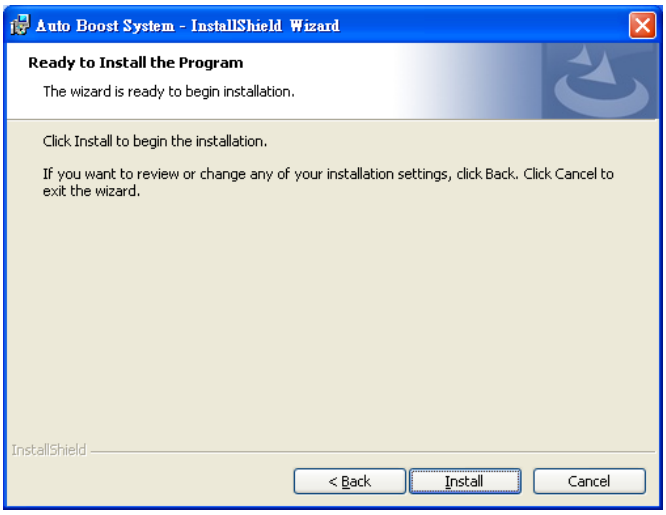
4. Setup is now ready to install the utility. Click Next.


Auto Boost System - InstallShield Wizard
Welcome to the InstallShield Wizard for Auto Boost System
The InstallShield(R) Wizard will allow you to modify, repair, or remove Auto Boost System. To continue, click Next.
< Back
Next >
Cancel

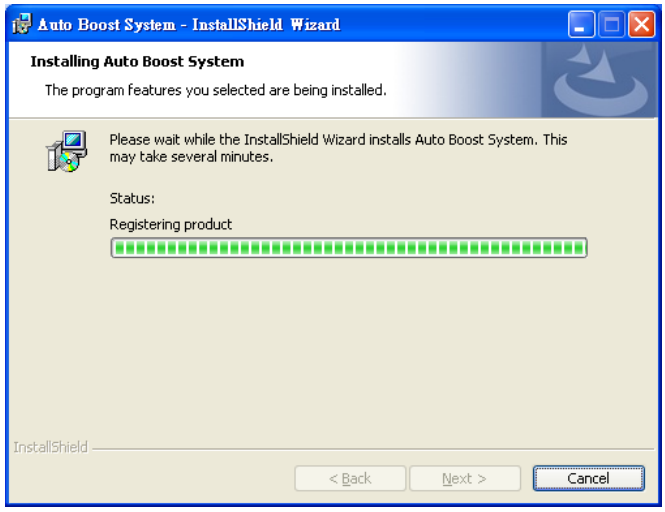
5. Click Next to install to the destination folder or click Change to select another folder.


Auto Boost System - InstallShield Wizard
Destination Folder
Click Next to install to this folder, or click Change to install to a different folder.
Install Auto Boost System to:
C:\Program Files\Auto Boost System\
Change...
InstallShield
< Back
Next >
Cancel

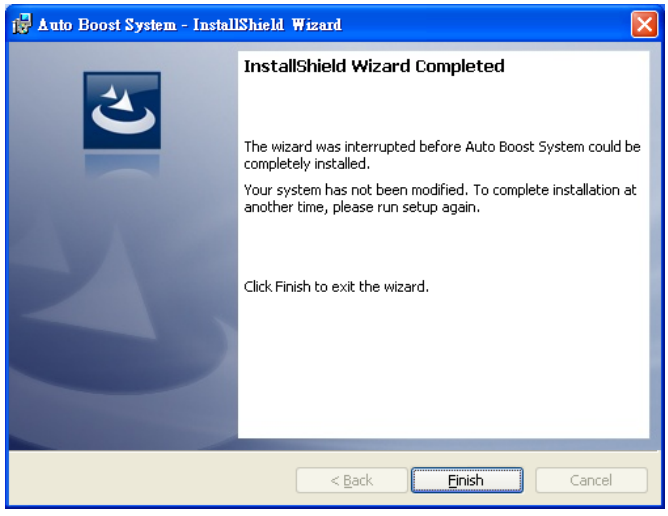
6. Click Install to begin the installation.


Auto Boost System - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

7. The installation wizard will copy all the necessary files and optimize the ABS features.


Auto Boost System - InstallShield Wizard
Installing Auto Boost System
The program features you selected are being installed.
Please wait while the InstallShield Wizard installs Auto Boost System. This may take several minutes.
Status:
Registering product
InstallShield
< Back
Next >
Cancel

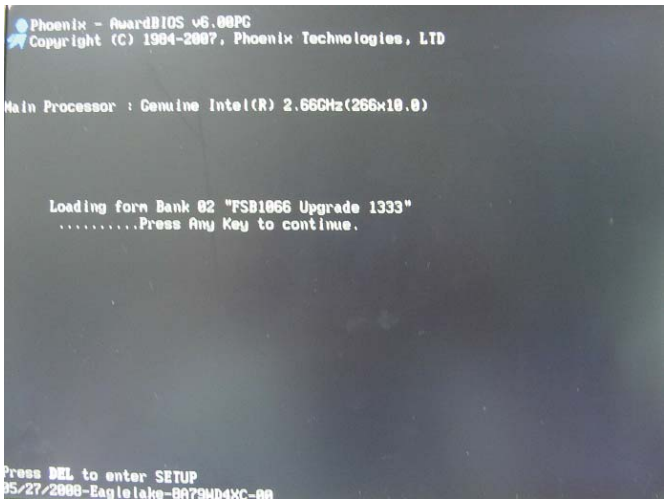
8. Click Finish to exit setup.


Auto Boost System - InstallShield Wizard
InstallShield Wizard Completed
The wizard was interrupted before Auto Boost System could be completely installed.
Your system has not been modified. To complete installation at another time, please run setup again.
Click Finish to exit the wizard.
< Back
Finish
Cancel

ABS - Auto Boost System

The ABS Utility

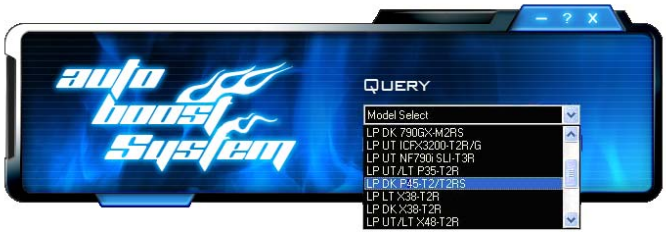
1. To run the ABS utility, power up your system then press F1. The screen will show the CPU upgrade information. Press "Any Key" to continue.


Phoenix - AwardBIOS v6.00PG
Copyright (C) 1984-2007, Phoenix Technologies, LTD
Main Processor : Genuine Intel(R) 2.66GHz(266x10.0)
Loading form Bank 02 "FSB1066 Upgrade 1333"
.....Press Any Key to continue.
Press DEL to enter SETUP

2. When the system enters the operating system, the ABS utility will appear and display the system's information. Click Auto Upgrade.

3. The screen on the right will appear.

4. Select the system board in use.



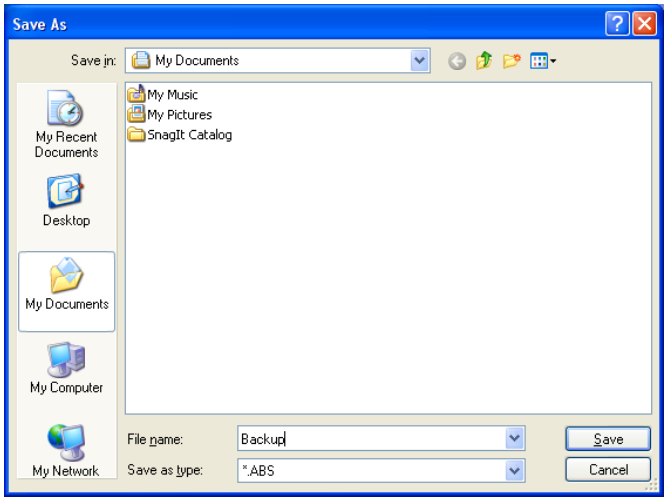
5. Click Confirm.

6. ABS supports Win Reloaded and Auto Upgrade features. Click Auto Upgrade.

7. Click Backup.

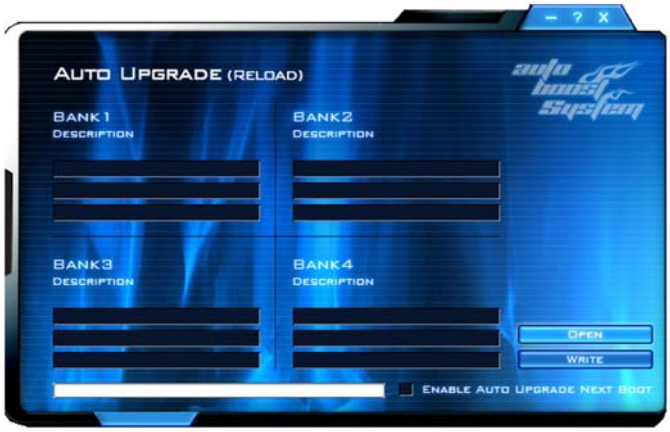
8. The default settings will appear on the screen. Click Save.

9. Enter a name for the default setting then click Save. You have just created a backup file of the board's default setting.

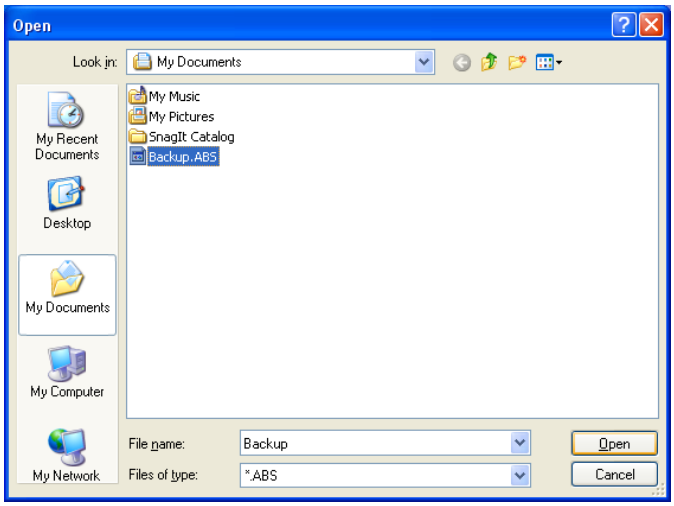


10. If in any case a new OC setting causes system instability, you can always retrieve the backup file saved earlier by clicking Reload.

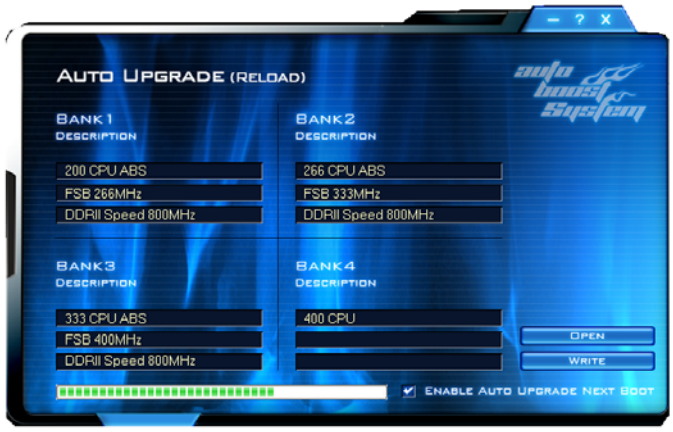
11. Click Open.



12. Select the backup file then click Open.

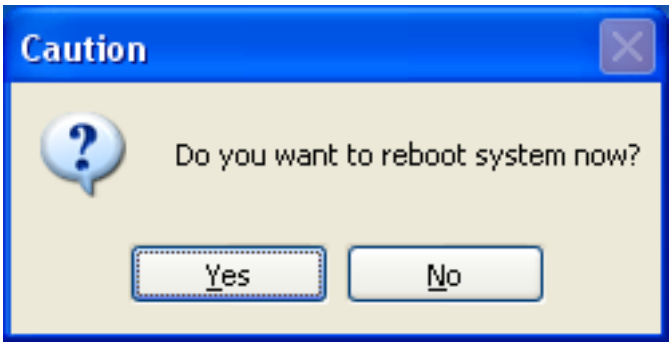


13. Click Write to load Banks 1-4 into the BIOS.



If you want the system to auto upgrade the setting the next time you boot the system, click "Enable Auto Upgrade Next Boot".

14. Click Yes to reboot.



Important:

1. *We strongly recommend that you backup the default setting. If in any case your overclock setting causes system instability, you can always retrieve the default setting by reloading the backup file.*
2. *Everytime you change the BIOS settings, remember to always backup the file because the previous backup file will not match the new BIOS settings therefore it will not work.*

Appendix B - Troubleshooting

Troubleshooting Checklist

This chapter of the manual is designed to help you with problems that you may encounter with your personal computer. To efficiently troubleshoot your system, treat each problem individually. This is to ensure an accurate diagnosis of the problem in case a problem has multiple causes.

Some of the most common things to check when you encounter problems while using your system are listed below.

1. The power switch of each peripheral device is turned on.
2. All cables and power cords are tightly connected.
3. The electrical outlet to which your peripheral devices are connected is working. Test the outlet by plugging in a lamp or other electrical device.
4. The monitor is turned on.
5. The display's brightness and contrast controls are adjusted properly.
6. All add-in boards in the expansion slots are seated securely.
7. Any add-in board you have installed is designed for your system and is set up correctly.

Monitor/Display

If the display screen remains dark after the system is turned on:

1. Make sure that the monitor's power switch is on.
2. Check that one end of the monitor's power cord is properly attached to the monitor and the other end is plugged into a working AC outlet. If necessary, try another outlet.
3. Check that the video input cable is properly attached to the monitor and the system's display adapter.
4. Adjust the brightness of the display by turning the monitor's brightness control knob.

The picture seems to be constantly moving.

1. The monitor has lost its vertical sync. Adjust the monitor's vertical sync.
2. Move away any objects, such as another monitor or fan, that may be creating a magnetic field around the display.
3. Make sure your video card's output frequencies are supported by this monitor.

The screen seems to be constantly wavering.

1. If the monitor is close to another monitor, the adjacent monitor may need to be turned off. Fluorescent lights adjacent to the monitor may also cause screen wavering.

Power Supply

When the computer is turned on, nothing happens.

1. Check that one end of the AC power cord is plugged into a live outlet and the other end properly plugged into the back of the system.
2. Make sure that the voltage selection switch on the back panel is set for the correct type of voltage you are using.
3. The power cord may have a "short" or "open". Inspect the cord and install a new one if necessary.

Floppy Drive

The computer cannot access the floppy drive.

1. The floppy diskette may not be formatted. Format the diskette and try again.
2. The diskette may be write-protected. Use a diskette that is not write-protected.
3. You may be writing to the wrong drive. Check the path statement to make sure you are writing to the targeted drive.
4. There is not enough space left on the diskette. Use another diskette with adequate storage space.

Hard Drive

Hard disk failure.

1. Make sure the correct drive type for the hard disk drive has been entered in the BIOS.
2. If the system is configured with two hard drives, make sure the bootable (first) hard drive is configured as Master and the second hard drive is configured as Slave. The master hard drive must have an active/bootable partition.

Excessively long formatting period.

If your hard drive takes an excessively long period of time to format, it is likely a cable connection problem. However, if your hard drive has a large capacity, it will take a longer time to format.

Parallel Port

The parallel printer doesn't respond when you try to print.

1. Make sure that your printer is turned on and that the printer is on-line.
2. Make sure your software is configured for the right type of printer attached.
3. Verify that the onboard LPT port's I/O address and IRQ settings are configured correctly.
4. Verify that the attached device works by attaching it to a parallel port that is working and configured correctly. If it works, the printer can be assumed to be in good condition. If the printer remains inoperative, replace the printer cable and try again.

Serial Port

The serial device (modem, printer) doesn't output anything or is outputting garbled characters.

1. Make sure that the serial device's power is turned on and that the device is on-line.
2. Verify that the device is plugged into the correct serial port on the rear of the computer.

3. Verify that the attached serial device works by attaching it to a serial port that is working and configured correctly. If the serial device does not work, either the cable or the serial device has a problem. If the serial device works, the problem may be due to the onboard I/O or the address setting.
4. Make sure the COM settings and I/O address are configured correctly.

Keyboard

Nothing happens when a key on the keyboard was pressed.

1. Make sure the keyboard is properly connected.
2. Make sure there are no objects resting on the keyboard and that no keys are pressed during the booting process.

System Board

1. Make sure the add-in card is seated securely in the expansion slot. If the add-in card is loose, power off the system, re-install the card and power up the system.
2. Check the jumper settings to ensure that the jumpers are properly set.
3. Verify that all memory modules are seated securely into the memory sockets.
4. Make sure the memory modules are in the correct locations.
5. If the board fails to function, place the board on a flat surface and seat all socketed components. Gently press each component into the socket.
6. If you made changes to the BIOS settings, re-enter setup and load the BIOS defaults.

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
Power on	None, blank	Nil	1. CMOS jumper is set at pins 2-3.	1. Set the CMOS jumper to pins 1-2 (default).
			2. 5Vsb of PSU is insufficient. (Minimum required - 2A)	2. Replace a suitable PSU.
00	Power on -> Stopped at **00**	BIOS program starts to set VID/FID to initialize CPU. (Boot Block area).	1. Mixed-up BIOS data.	1. Clear the CMOS data.
			2. Defective CPU connection.	2. Remove and reinstall the CPU.
			3. Incompatible PSU.	3. Replace a suitable PSU.
			4. No CPU power.	4. Inspect the 12V connection.
			5. Reset button short-circuited.	5. Inspect the cable that connects the reset button to the front panel connector.
00	Power on -> **00** -> Reset -> Looping	CPU VID is incorrect.	PSU does not comply with the system's requirement.	Replace a PSU that will provide adequate power to the system.
A0	00 -> C1 -> Stopped at **A0**	A0~AF Definition: Initializing memory check code.	1. Incompatible memory modules.	1. Remove and reinstall the memory modules.
			2. Mixed-up BIOS data.	2. Clear the CMOS data.
b8	00 -> C1 -> Stopped at **b8**	B0~BF Definition: Initializing memory/devices check code (registers).	1. Mixed-up BIOS data.	1. Clear the CMOS data.
			2. Incompatible memory modules.	2. Remove and reinstall the memory modules.
			3. Incompatible PCI devices.	3. Remove and reconnect the PCI devices.
C0	00 -> Stopped at **C0**	Initializing memory.	1. Probing for failed memory devices.	1. Make sure the memory modules are installed properly in the slots.
			2. SPD value is lost or empty.	2. Replace the memory modules.

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
C1	00 -> C0 -> Stopped at **C1** (00 -> C0 -> C1 ->) Reset -> Looping)	Detecting memory. Detecting DRAM size and type. ECC auto-detection of L2 cache.	1. Incompatible memory modules.	1. Remove and reinstall the memory modules.
			2. Overclocking issue (tight DRAM timing).	2. Clear the CMOS then load the default speed.
			3. One of the memory modules is defective.	3. Try installing a single module only.
C3/C5	C0 -> C1 -> Stopped at **C3/C5** (C0 -> C1 -> C3 ->) Reset -> Looping)	Expanding compressed BIOS code to the DRAM.	1. Tight DRAM timing (system is unstable).	1. Clear the CMOS then load the default speed.
			2. Insufficient DRAM voltage.	2. Increase the DRAM's voltage.
			3. Overclocking issue.	3. Remove and reinstall the memory modules.
CF	Shutdown -> Stopped at **CF** (Shutdown -> CF -> Reset)	Resume on S1/S3 failed.	1. Insufficient DRAM voltage.	1. Increase the DRAM's voltage.
			2. Incompatible memory modules.	2. Remove and reinstall the memory modules.
			3. Overclocking issue (tight DRAM timing).	3. Load the default DRAM speed.
			4. BIOS issue.	4. Upgrade to the latest BIOS.
E0	C0 -> C1 -> Stopped at **E0**	E0-EF Definition: Initializing PCIE device check code.	1. Mixed-up BIOS data.	1. Clear the CMOS data.
			2. Incompatible PCI devices.	2. Remove and reinstall the PCI device.

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
25	00 -> C1 -> C3 -> Stopped at **25**	Enumerating PCI bus number. Assigning memory & I/O resource - searching for a valid VGA device & VGA BIOS then placing it in C000:0.	1. Incompatible PCI devices.	1. Remove all PCI/PCIE devices and leave only the graphics card to test first. Test the devices one at a time to determine the one with problem.
			2. Incompatible USB devices.	2. Remove all USB devices including the USB keyboard and instead use a PS/2 keyboard to test.
			3. Defective graphics card. (VGA BIOS did not initialize)	3. Replace the graphics card.
			4. The graphics card was not installed properly.	4. Remove and reinstall the graphics card.
26	00 -> C1 -> C3 -> Stopped at **26**	Initializing display card. Initializing onboard clock generator. Disabling respective clock resource to empty PCI & DIMM slots. Initializing onboard PWM3. Initializing onboard H/W monitor devices.	1. Defective graphics card.	1. Replace the graphics card.
			2. Initialized wrong BIOS process. (Clock-gen circuit / Super IO circuit)	2. Clear the CMOS data.
41	C3 -> 25 -> 26 -> Stopped at **41**	Initializing the FDD device.	Detected floppy error.	Unplug the FDD cable and check for errors or check the BIOS settings.
			* Mixed-up BIOS data could be one of the causes too.	* Replace a new BIOS chip.
50	Power on -> Stopped at **50**	Initializing USB devices.	1. USB failed to boot. (BBS issue)	1. Clear the CMOS data first.
			2. Incompatible USB devices.	2. Try connecting the device to another USB port. 3. Test the USB devices one by one. 4. Set the USB power source to 5V by means of the 5V/5Vsb select jumper.

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
75	Power on -> Stopped at **75**	Initializing storage devices. (Probing for IDE devices or SATA devices)	1. Lost power source of some devices.	1. Inspect the power cable connection.
			2. Incompatible SATA or PATA device.	2. Inspect the IDE cable connection or replace another PATA/ SATA device.
			3. CD-ROM's spin took too long.	3. Remove the disc, if present, from the CD-ROM device.
7F	Power on -> Stopped at **7F** * Checksum error always appear after the BIOS default has been loaded.	BIOS setup module in progress. Reporting BIOS check errors. Waiting for keys: DEL key to load the BIOS default. F1 key to continue.	1. Checksum error occured. (Change/add devices such as CPU/ DRAM)	1. Load the optimized default setting of the BIOS.
			2. Error occured after clearing the CMOS.	2. Alter or adjust the BIOS setting.
			3. Onboard battery is depleted.	3. Replace a new battery.
			4. Overclocking issue.	4. Decrease the overclock range.
			* The battery circuit of the MB is defective.	* RMA action required.
FF	Power on -> Run to **FF** * Blank Screen	Boot attempt (INT 19h) System booted normally.	Normal Operation	Nil
			* The graphics card was not connected properly or it is defective.	* Remove and reinstall the graphics card.

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
79	Power on -> Prompt Stopped at **79**	There is no “79” definition on the Award BIOS code. (BIOS program executed the wrong process therefore showing the wrong POST code.)	1. Mixed-up BIOS data.	1. Clear the CMOS data.
			2. MB is defective. (NB chip may be defective.)	2. RMA action required.
88	Power on -> Prompt Stopped at **88**	There is no “88” definition on the Award BIOS code. (BIOS program executed the wrong process therefore showing the wrong POST code.)	1. Mixed-up BIOS data.	1. Clear the CMOS data.
			2. MB is defective. (NB chip may be defective.)	2. RMA action required.
FF	Power on -> Prompt Stopped at **FF**	Definition: BIOS process completed. (BIOS program executed the wrong process therefore showing the wrong POST code.)	1. Mixed-up BIOS data.	1. Clear the CMOS data.
			2. MB is defective. (NB chip may be defective.)	2. RMA action required.

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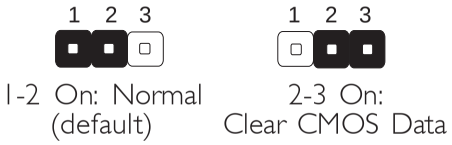
Clearing CMOS Data

1. Turn-off and unplug the AC power.
2. Move the jumper cap from pins 1-2 to pins 2-3.
3. Wait for 5 seconds then move the jumper cap back to pins 1-2.



1-2 On: Normal (default)

2-3 On: Clear CMOS Data

Totally Discharging the Motherboard

Unplug the AC power and remove the battery for 5 minutes then reinstall the battery and plug the AC power back on.